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ABSTRACT

This guide for teachers focuses on how microcomputers may be used in the home economics classroom and how the computer is affecting and changing family life. A brief discussion of potential uses of the microcomputer in educational settings is followed by seven major sections. Sections 1 and 2 provide illustrations and definitions for microcomputer equipment, steps for making decisions on hardware purchases, minimum hardware items needed, suggestions for evaluating computer software, questions to be asked before purchasing software, and a short evaluation checklist developed specifically for the evaluation of home economics software. Section 3 identifies and explains the three uses for computers in the home economics classroom--computer assisted instruction, computer managed instruction, and the production of student learning materials. Section 4 provides information on 96 specific home economics software programs grouped under the following headings: careers; child development and child care; clothing and textiles; consumer education; family living, values, decision making and self-improvement; foods and nutrition; housing; preschool education; and miscellaneous. Nine future computer skills are projected for home economics teachers in Section 6, and Section 7 identifies seven future uses of computers in the home. Topics which relate to the microcomputer's impact on future life are also discussed, and the document concludes with a collection of five sample home economics computer programs written on an Apple IIe, a glossary of computer terms, a list of software producers and distributors, and suggestions for further reading. (JB)

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COMPUTERS IN THE HOME ECONOMICS CLASSROOM

Ruth Browning
Sandra Durbin

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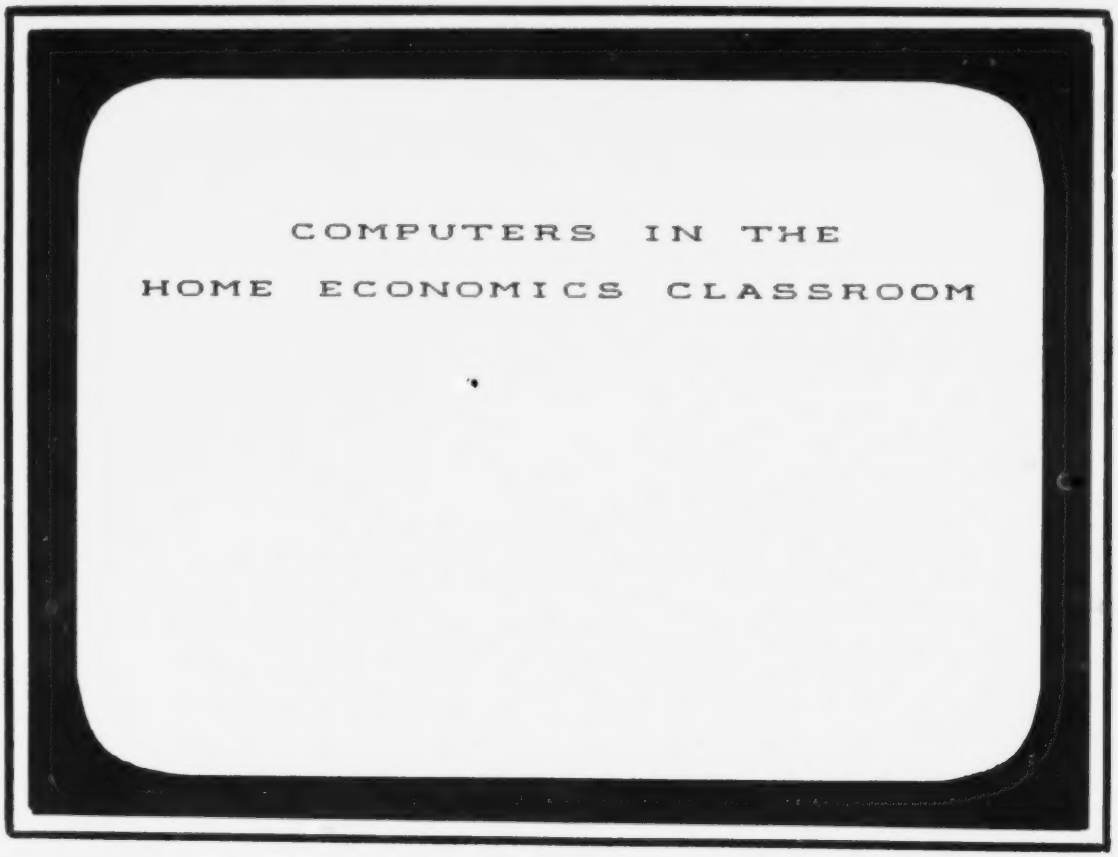

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FOREWORD

We are deeply immersed in the new information technology at this time. This dramatic breakthrough will affect every home and probably every person in the next twenty years. The impact of the information technology will likely parallel the discovery of electricity and the invention of the gasoline engine. Unfortunately few people in our society today could be classified as intelligent consumers of the new technology. I believe we must either use it or be left behind.

Browning and Durbin have presented an excellent cross section of information about the use of computers. They present their ideas in an easy to understand and clear manner and are successful in presenting the gestalt of the process! I believe that the life style of America will be impacted upon greatly by the new information technology, and this manuscript will help every home economics educator better understand or at least be patient with the process. The computer can and should be utilized to help us organize and use the information that is available to us, not only in home economics but the service areas which we incorporate. If Shane's prediction is even partially correct, that there will be forty million microcomputers used in homes by 1997, then it behooves us to move quickly and surely in this pedagogical process. You, as a home economics educator, must decide rather quickly whether you will be a consumer or producer of the new information technology. But, you will not be allowed the privilege of being a neutral in the movement. I urge you to read this excellent manuscript carefully and to be a promoter and advocate of the educated use of computers in our homes and schools.

The Home Economics Education Association is very appreciative of the excellent work by Ruth Browning and Sandra Durbin. Their work shows much thought and depth. It will be a valuable resource for home economics teachers in the months ahead.

Janice Morgan

Janice Morgan, Ph.D.
HEEA President, 1983-1985

PREFACE

The focus of this publication is use of the microcomputer in the home economics classroom. A computer can range in size from the small 4K home computer used primarily for playing games to a large computer which can handle millions of bytes of information and many users at one time. Many statements in this publication are true about all computers regardless of size; therefore, the term computer rather than microcomputer is frequently used. However, the focus of the publication is the microcomputer—the most frequently used computer in the home economics classroom.

This publication presents an overview of how the computer may be used in the home economics classroom and how the computer is affecting and changing family life. References to specific software programs are given to provide examples. The statements and examples reflect the experience of the authors and are sometimes subjective. No attempt is made to teach programming skills in this publication. Likewise, detail about many parts of the computer system are not included. Many other references are available which cover these topics.

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INTRODUCTION

Computers are mind tools affecting the home economics classroom and the home. Microcomputers, small and portable, are effective tools in promoting learning, managing instruction, and in preparing instructional materials. Microcomputers are projected to be the next major appliance in the American home. Predictions are that by 1990, 7.5 million computers will be in use in the home; 40 million by 1997 (Shane, 1982). The way we think, work, acquire information, and communicate is changing. The speed, reliability, and accuracy of the computer makes it practical to perform tasks that previously were almost impossible. Society is becoming divided between those who are computer literate, thus able to use a computer as a tool in their daily lives, and those who are computer illiterate — many of whom are afraid of the computer and scared of the impact computers are having on their lives. It is predicted that by the year 2000, computers will be as common in homes as telephones and television sets.

A computer is a tool

— invented by humans

— programmed by humans

— controlled by humans

— unable to do anything without instructions from a human.

In the schools, the potential use for computers, as viewed by educators, varies according to the background and interests of the educator. Some educators view the computer as merely an instructional aid for drill and practice of basic skills (similar to a workbook) or as a tutor. Others view the computer as another skill to learn such as typing or reading. Some believe knowledge of computers and their operation is of primary concern. Still others see computers as something to be understood and appreciated within the context of culture. Administrators tend to think of computers as tools for financial and educational management in addition to instruction.

In home economics, the microcomputer may be viewed as a tool to improve family life. A computer has the potential to assist families in making wise consumer choices and financial decisions, to encourage the cognitive development of children, to analyze diets and costs of meals, and to help manage various aspects of family life.

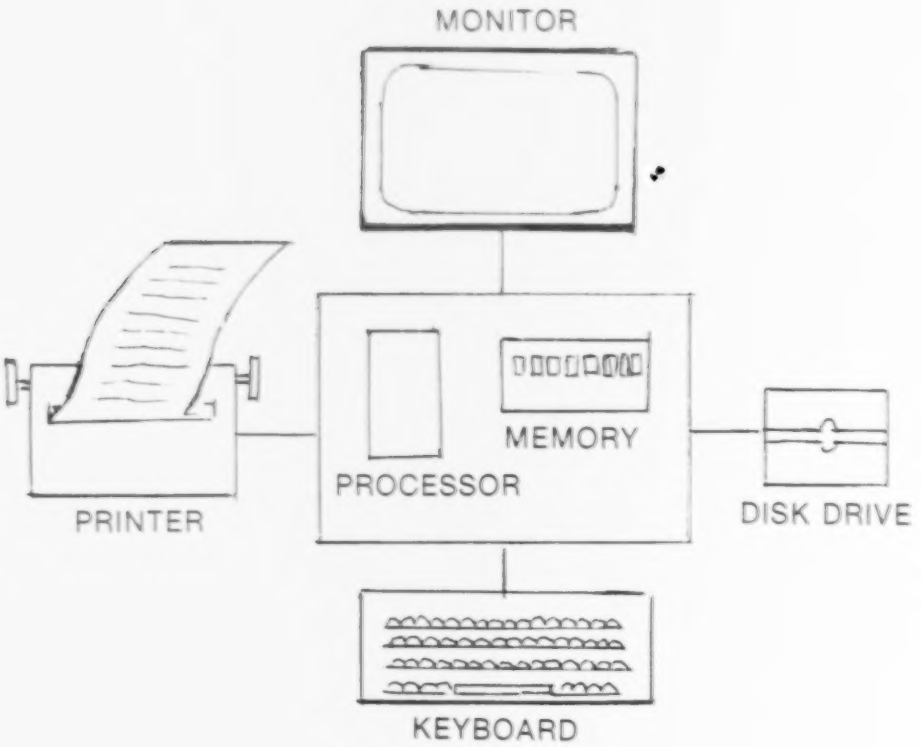
Computers in the home economics classroom have potential as instructional aids in any subject area. The teacher may use a computer in preparing information sheets, study guides, tests, and other materials for classroom use in addition to keeping records such as grades, attendance, and inventories.

In many schools, computers have been placed in the mathematics classroom where instructional emphasis is often on programming skills rather than on use of the computer as a learning tool. This is unfortunate because operating a computer is not similiar to arithmetic. It is more closely related to writing using very rigid rules. Computers permit great creativity in writing, programming, and decision making. Additionally, a well developed commercial software program forces the user to pay close attention and follow directions explicitly. Our social and economic systems are becoming increasingly dependent on effectively managed technology. The home, as a vital part of these systems, is no exception. Homemakers must be technologically literate to manage the home and family affairs in an efficient manner. Technological literacy might include the ability to think critically, evaluate preceptively, and access and use constantly changing information bases. Decision making skills as taught in consumer and homemaking classes are an essential component of new competencies families will need to use. One of the distinguishing characteristics of the have and have not families of the future will be the technological literacy of family members.

There is a vast difference between what computers can do and what families will choose to do with them. Teachers in home economics classrooms have the potential to influence how families will use the computer now and in the future.

HARDWARE SELECTION

Hardware, the actual microcomputer equipment, consists of a keyboard, monitor, and disk drive (or cassette tape recorder). These devices perform the computer's functions. A television set (with an RF modulator) may be used with some computers although display is less clear than with a video display monitor built for use with a computer. A black and white monitor (or green or amber) is excellent for words; color is desirable for graphics and games. The keyboard is used to enter data and control the computer. A disk drive is quicker and easier to use than a cassette recorder. Also, most home economics software comes on a floppy disk. A device called a mouse is available with some computers to control data.



Additional hardware may be desirable. A printer can be used to make a paper copy or printout of data. An 80-column card enables the video display to show 80 columns of print across the screen. A microcomputer screen is normally 40 columns wide. Eighty columns is a common width for printing on 8½ x 11 inch paper. A second disk drive is desirable for copying and for some longer programs.

A modem or acoustic coupler permits the microcomputer to be connected to other computers or data banks via telephone. Joy sticks are normally used for playing games.

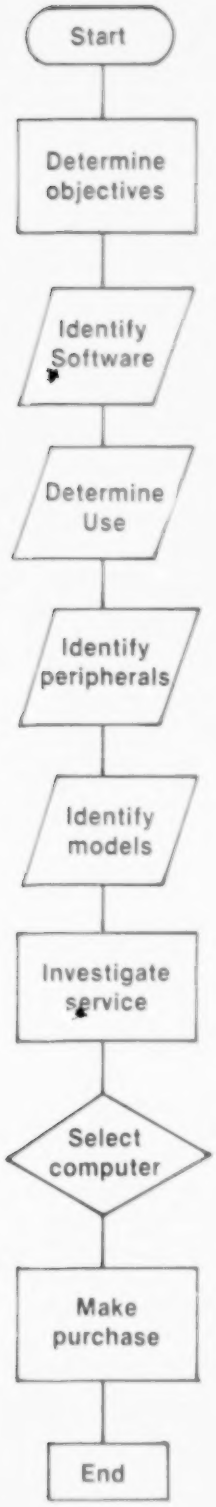
Computer equipment should be selected only after much study. Before purchasing a computer, determine how it will be utilized. A computer is worthless unless there is software available which can be used with it. A computer is simply a means to accomplish a job. Before a decision to purchase a computer is made, investigate thoroughly what home economics software is available and determine how it will serve to achieve home economics objectives using appropriate methods (e.g., individual work stations, network system, or group instruction).

Some schools administratively decide that a single type of computer will be purchased for the entire school system so that all computers in the school will be alike. This is a mistake! Software for home economics is available for only a few makes of computers. Additional software is becoming available but one must be certain there is software available for the specific computer purchased and that it will assist in reaching student objectives. Beware of bargains! A bargain price for a computer may indicate a problem.

An important consideration is determining who will provide repair service for computers purchased. Computers break down just as other appliances do, and perhaps a little more frequently. Local dealers are hesitant to provide service when computers are not purchased locally. Although mail order firms will probably sell computers for less than a local dealer, it may be better over the long haul to purchase from a local dealer with a good service reputation.

Memory or amount of character storage needed must be considered. The computer must have a memory large enough to hold software programs that are to be used. Amount of memory is given in K's. One K equals 1,024 characters or bytes of information. Thus a 64K computer would hold a little over 64,000 characters of information.

Read, visit computer stores and fairs, enroll in a computer course, and learn as much as possible before purchasing a computer. You'll need to know about such things as disk vs. cassette storage, peripherals, RAM, ROM, BASIC, monitors or video displays, graphics, amount of memory, 80-column cards, modems, printers, joy sticks, upper and lower case, networking systems, and surge protectors. Learn as much as you can but don't wait until you feel you know all you need to know — you never will. You'll learn much just by using the computer after purchase. You're ready to purchase a computer as soon as you feel knowledgeable about the software available and comfortable in using computer terminology. Most school personnel have access to a media specialist who may be able to provide guidance.



Steps for making decisions regarding hardware purchases are illustrated in the flowchart. (A flowchart is a diagram of the sequence of steps a programmer takes to solve a particular problem.) Recommended steps are summarized below.

1. Determine course objectives.
2. Identify software available which will assist in achievement of the objectives.
3. Determine how and where computer and software will be used.
4. Determine peripherals needed to use the software.
5. Determine the makes and models of computers on which identified software will work.
6. Investigate service available for computer repair.
7. Decide upon computer and software to purchase.
8. Make purchases.

Many are unable to purchase all parts of a computer at one time due to limited finances. The chart below shows the minimum hardware items needed for a computer to be used, as well as items that are less essential.

Hardware Needs

Minimum Needed

- Computer (64K memory will meet most classroom needs)
- Monitor for video display
- Disk drive (floppy)
- Connecting cables

Recommended — In Priority Order

- Printer (dot matrix)
- 80-column card (reduces letter size on monitor so 80 columns of print may be viewed)
- Second disk drive

Probably Not Needed

- Joy sticks or paddles
- Modem or acoustic coupler
- Cassette option

SOFTWARE SELECTION

Little software is needed for teaching **about** the computer and how it operates. However, when using the computer for instruction, the quality of instruction depends on the quality of the software, rather than on the computer. Software is expensive, and schools using the computer as an instructional tool should probably plan to spend more on the software than on the computers. The development of quality software takes much more time than most schools and teachers can afford. It is unrealistic to expect teachers or a media specialist to develop all needed software. Expecting a teacher to write the software for the classroom is like expecting a teacher to write the textbook for the course.

How does one identify high quality programs? We search catalogs and advertisements, attend computer and courseware fairs, and read reviews of the effectiveness of programs by home economists to determine which programs meet our objectives. We use the same skills used for years in evaluating books and media materials as well as our practical experience and knowledge of the needs of the students.

Reviews of software are contained in many computer journals and publications. Care must be taken to avoid confusing reviews written by users with product announcements. The most useful reviews are those written by home economics teachers who have experience in using the software with students. However, such reviews are subjective and should only be used as guidelines in software selection. Each teacher must evaluate software in terms of course goals and objectives.

Following are questions which need to be asked (and answered) before purchasing software.

1. Does the software run on my equipment?

   You must know the exact type and configuration of the computer you will use. Programs written for one computer will usually not run on another make and perhaps not even on any other model. There are several models for each make of computer and conversion of programs to another model is often difficult, if even possible. The language must be compatible with your hardware. You must have the correct Disk Operating System (DOS) with enough memory. For example, a program requiring 48K of memory will not run on a 16K computer. Programs sold on a disk will not run on a cassette recorder system. Some programs require two disk drives, a printer, or other peripheral device.

2. Can I preview the software prior to purchase?

   It is becoming increasingly difficult to preview software before purchase. Vendors are reluctant to send preview copies when programs are so easily copied and so easily damaged. Some retail computer stores will permit you to preview materials on their premises. A few will let you purchase on thirty-day approval. Courseware fairs are being held in some localities. Such fairs could be planned and conducted as part of state or regional meetings of home economists. If a nearby school has the program, arrangements can be made to visit the school or talk with the teachers where it is being used. Portions of a few new programs are available on demonstration diskettes for a small fee.

3. Does the courseware address the objectives of the home economics program or meet a special need?

   Will it meet the needs of many students or a special group of students? **An excellent program is a waste of money if it does not focus on the instructional objectives of the home economics class.** A computer can be used individually in a learning center or by a group when connected to a large TV screen and placed where the entire group can see.

4. Is the software free of technical problems?

   What happens when the user makes a mistake? Is the information correct? For example, has the program writer created a food group called the Beverage Group and included milk in this group while omitting milk from the Dairy Group? What if the user cannot read the instructions? Are there introductory and follow-up suggestions included? Good programs will encourage student activity and learning away from the computer.

A short Software Evaluation Checklist developed by Hovis (1983) is provided on the following page. This checklist was developed specifically for the evaluation of home economics software.

SOFTWARE EVALUATION CHECKLIST

Check **YES**, **NO**, or **NOT APPLICABLE** for each item below. Add comments in COMMENT column.

SUBJECT MATTER	YES	NO	NA	COMMENTS
1. Subject matter is accurate.				
2. Subject matter is appropriate for intended users.				
3. Objectives are meaningfully presented.				
4. Difficulty level is consistent for material, interest, and vocabulary.				
5. Subject matter teaches relevant information/skills.				
6. Subject matter is free of race, ethnic, sex, or other stereotypes.				
PRESENTATION				
7. Program is free of technical problems.				
8. Instructions are easy to follow.				
9. Curriculum material is logically organized and presented.				
10. Frame display is clear and easy to read.				
11. Program is free of spelling and grammatical errors.				
12. Program response time is adequate.				
INTERACTION				
13. Program provides for maximum meaningful interaction.				
14. Cues and prompts help students answer questions correctly.				
15. Students can use program with minimal assistance.				
16. Students can control the pace and sequence of program.				
17. Program stimulates creativity among users.				
18. Students can access the program "menu" for help or to change activities.				
19. Feedback is effective, appropriate, and non-threatening.				
20. Positive reinforcement is provided in varied manner.				
21. Program has ability to branch/loop depending upon student's performance.				
22. Program helps students understand wrong answers.				
EVALUATION/TEACHER USE				
23. Program includes worksheets, activity sheets, tests.				
24. Teacher can easily modify program to fit students.				
25. Evaluation provides means for measuring attainment of objectives.				
26. Documentation is clear and comprehensive.				
27. Documentation is updated periodically, at little cost.				
28. Class performance results are available to the teacher.				

OVERALL EVALUATION

(Check one)

_____Excellent program. Recommend without hesitation.

_____Pretty good program. Consider purchase.

_____Fair. May want to wait for something better.

_____Not useful. Do not recommend purchase.

Developed by:
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COMPUTER USES IN THE HOME ECONOMICS CLASSROOM

Computers may be used three ways in the home economics classroom. Computer assisted instruction (CAI) provides aid in learning, reviewing information, or using information in simulated situations. Computer Managed Instruction (CMI) capabilities enable the teacher to maintain records on the computer such as grades, inventories, or competencies acquired by students. The computer can also be a teacher helper as it can be utilized to produce materials for student learning activities in the classroom. However, the teacher must monitor all aspects of computer usage to insure instructional effectiveness.

CLASSROOM USES

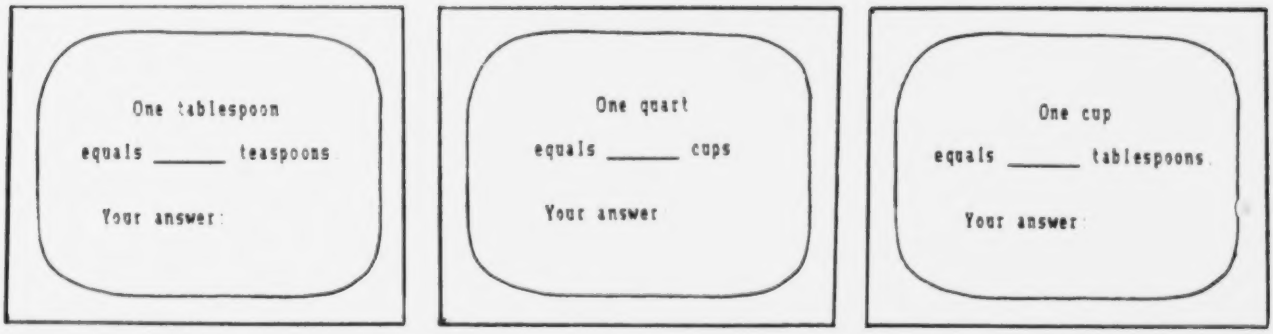
1. Computer Assisted Instruction
2. Computer Managed Instruction
3. Teacher Utility or Tool

COMPUTER ASSISTED INSTRUCTION

Programs for computer assisted instruction vary from low level learning activities (knowledge and comprehension) to sophisticated activities requiring analysis, synthesis, and evaluation. The computer can be used to help students achieve existing goals and objectives of the home economiccs curriculum. For example, several programs exist which teach food facts and analyze diets. The capabilities of a computer to perform calculations and manipulate numbers make it possible to expand objectives or develop new objectives in areas which have frequently been slighted in the home economics classroom. For example, budgeting and financial management concepts become fun when laborious calculations are done instantly by the computer. Programs for computer assisted instruction may be classified into the broad categories of drill and practice, tutorial, simulations, games, and mathematical problems.

Drill and Practice

Drill and practice programs are not designed to teach, but to review and reinforce facts learned through another instructional medium, as illustrated in the sample frames of a drill and practice program on the next page. In many ways, such programs are "expensive flash cards." However, drill and practice programs can be written fairly easily by a teacher or student with limited programming skills. Students with programming skills can learn the desired home economics content by finding information and writing such programs for use by other students. Modifying existing or teacher-written programs to improve them could also be challenging and stimulating learning experiences for these students.



Sample Frames of a Drill and Practice Program

If overused, the repetitiveness of drill and practice programs can lead quickly to boredom. They frequently require everyone to follow the same path without providing enough small steps or examples for the student who finds learning difficult, or providing enough challenging exercises for the skilled learner.

Besides the fact that they are easy to write, drill and practice programs do have several other assets. They can provide immediate feedback on whether a response is correct or incorrect. Addition of graphics or animation can make them more interesting and incorporation of several levels of difficulty make them more useful. Such programs can be written to keep track of correct answers and to store the individual scores of students.

The best uses of such programs are probably in individualized learning centers rather than in teacher-centered classrooms. Review, rather than new learning, is best achieved by such programs.

Tutorial

Tutorial programs are designed to present information and teach facts or concepts. They can be much like reading a book on a video screen. Most tutorial programs provide some information and then ask questions about the information. Such quick feedback provides fast reinforcement of learning. If sequenced in small logical steps, tutorials can be extremely effective in promoting learning. Depending on student response, the computer can provide more information, elaborate on concepts, or move quickly to new information.

A tutorial program is more difficult to write than a drill and practice because the writer must anticipate potential students responses. However, tutorials can be effective in providing new information, introducing or reviewing a topic, or instructing a student who was absent when the topic was presented to a group.

Simulations

Simulations are designed to imitate real life situations. Programs must be accurate representations of reality and need to contain a complex system of data, based on how the real life situation operates. Some board games such as CONSUMER (Zaltman, 1969) and GHETTO (Fall, 1969) are examples of simulations. Computer simulations can be much more complex than board games. Simulations can help students learn content, motivate interest in a topic, provide opportunity for practicing decision making skills, and analyze problems and alternatives.

A good simulation program forces attention on specific aspects of real life situations and permits users to explore and experiment by manipulating variables to see how changes or decisions impact on other circumstances. The best simulations require advanced thinking and problem solving skills.

Good simulations combine information, graphics, animation, decision making, and a realistic problem. They are difficult to design without advanced programming skills. Most simulation programs on the market leave much to be desired but the potential exists for great learning experiences. One of the earliest developed, SELL LEMONADE (MECC, 1982) is a good example of a simple, yet thought provoking simulation. It simulates establishing a front yard lemonade stand. "Operators" obtain sugar and lemons from a parent but must use savings for advertising posters, deal with setbacks of rainy weather, and make decisions related to price and replacement of supplies, to reach the goal of making a profit.

Due to the complexity of simulation programs, few teachers or students, even those with programming skills, take time to develop them. Yet, some home economists should be more actively involved in writing simulation programs and working with programmers to develop quality simulations, since they have great potential for the home economics classroom.

Learning Games

Closely related to simulations are instructional games. Games differ in that they have a clear set of rules, clear goals, a winner, and are designed to be fun. To warrant use of classroom time, instructional games must help students learn worthwile concepts and be based on facts to be taught.

As in simulations, good games are difficult and time consuming to develop. However, games can foster student interaction and discussion away from the computer. Effective games can also be used to help students achieve content-focused classroom goals, particularly when they are followed with discussion of assumptions on which the games are based.

Mathematical Problems

Activities involving numerical calculations are ones which programmers enjoy developing into computer programs. Many of these problem-solving programs are so short and easy to write they are not available commercially. Students with computer programming skills frequently enjoy writing them for other students to use. Examples of program ideas a home economics teacher might suggest are included in the list following this section.

Although programs may be classified as drill and practice, tutorial, simulations, or games, there is no reason these cannot be combined in a single program. Several of the newer and best programs combine two or more types. Such variety tends to help stimulate and hold interest.

PROGRAMS PERSONS WITH PROGRAMMING SKILLS COULD WRITE

Write a program which will:

Determine amount of paint to buy to paint a room.

Figure cost to carpet a room.

Determine the cost of constructing a garment.

Calculate cost of a recipe or meal.

Balance a checkbook.

Determine the weight of a waterbed.

Determine the cost of electricity used for a specific appliance.

Print return address labels (special labels needed for printer).

COMPUTER MANAGED INSTRUCTION

For most home economics teachers, the primary computer managed instruction (CMI) use is academic record keeping. This can include keeping records of grades, attendance, and competencies or objectives achieved. Records of Individualized Educational Plans (IEP's) can also be stored on a computer.

A number of commercial programs can be obtained for these record keeping purposes. CLASSFILE (K-12 Micro Media, 1981) and REPORT CARD (Sensible Software, 1982) are such programs. TEACHER UTILITIES VOLUME I (MECC, 1982) contains several programs for teacher use, one of which is a grade book. However, home economics teachers who have VISICALC (VisiCorp, 1979), or a similar electronic spreadsheet available and have mastered it, can easily develop their own grade keeping worksheet. Such programs allow for weighting of specific scores and can total or average grades instantly. The illustration of a grade book on the next page is a simple example showing how scores may be weighted, the weighted average of each student's grade automatically printed, and the average class score for each project or test automatically computed and printed.

GRADE BOOK

	PROJ-1	PROJ-2	QUIZ-1	PROJ-3	PROJ-4	TEST	GRADE
	--PERCENT OF FINAL GRADE--						
	10%	10%	20%	10%	10%	40%	
AMBEL, J	95	90	100	90	100	96	95.9
BATT, K	85	82	90	95	95	90	89.7
DAVIS, S	92	100	90	95	100	92	93.5
GROVER, T	87	93	85	85	90	80	84.5
HOLT, A	75	82	65	80	70	72	72.5
KING, J	100	100	95	90	100	93	95.2
MILNE, O	98	85	90	85	90	85	87.8
NEW, F	100	90	90	95	100	90	92.5
ROTH, C	90	87	80	85	80	80	82.2
SMYTH, D	80	85	80	75	70	75	77
WITT, H	95	88	90	85	90	85	87.8
CLASS AVG	90.63636	89.27273	86.81818	87.27273	89.54545	85.27273	

Teachers can also keep an inventory of their equipment and supplies on the computer. Such an inventory could be revised and printed as needed and could be designed to print out a list of items in low supply for use in food purchasing.

PRODUCTION OF STUDENT LEARNING MATERIALS

Authoring software packages are available to produce classroom instructional aids. PILOT (Programmed Inquiry, Learning or Teaching) is an authoring language designed to create dialogue materials. Such packages permit individuals with little programming experience to author interactive instructional materials which accommodate a variety of student responses. SUPERPILOT (Apple, 1982) is one such package which also permits the use of graphics.

Other programs enable the teacher to produce specific kinds of classroom aids. CROSSWORD MAGIC (L&S Computerware, 1981) creates crossword puzzles using words and clues provided by the teacher. WORD SEARCH (Hartley Courseware, 1982) produces word puzzles for vocabulary drill and reinforcement. Some software includes several programs on a single disk. For example, TEACHER UTILITIES VOLUME I (MECC, 1982) includes programs for creating crossword puzzles, word searches, and posters, or letters of various sizes.

Information sheets, study guides, laboratory instructions, and other kinds of teacher developed written materials for student use can be made quickly with a computer and an appropriate software package. Anything that can be typed can be put on the computer. By using a word processing software package and printer, even a poor typist can produce neat, good looking materials for classroom use. These materials can be stored on a diskette and updated or revised the next time the material is used. It then appears as new, relevant material with little effort.

New software is under development and coming on the market rapidly. Much of the newer software is of better quality than that which has been available. Home economists must let software developers know what their software needs are. Some home economists must also become programmers themselves or work closely with programmers in the development of high quality, useful programs.

HOME ECONOMICS SOFTWARE

Teachers can look forward to a future with educationally sound programs correlated to texts and curriculum. At the present time, the teacher must become familiar with software, its objectives and content, and determine how it fits into the existing curriculum.

In some home economics subject areas, there are many software programs available (e.g., foods and nutrition). In other home economics subject areas, little software is available at the present time. Following is a compilation of some of the better home economics software available. Evaluations of many of these programs were made by Pennsylvania home economics educators under the leadership of Hovis (1983).

In this listing, the column labeled Microcomputer indicates the type of computer for which each program is known to be available. Unless indicated otherwise, programs listed as available for Apple should run on Apple II+ and Apple IIe computers. Likewise, those programs listed for IBM should run on the IBM-PC. Prices given are list prices. Frequently software can be purchased at a discounted price. Addresses for the software producers and distributors listed are given at the back of this publication.

HOME ECONOMICS SOFTWARE

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
CAREERS				
CAREER DIRECTIONS Julie Margolis	System Design Associates, Inc.	Apple	$59.00	User identifies career interests, skills, and abilities.
CAREER EXPLORATION James L. Lee and Charles Pulvino	Instructional Enterprises	Apple	$39.39	User analyzes self and preferences related to the world of work.
SURVIVAL SKILLS SERIES: 1. THE JOB AND YOU 2. NEW ON THE JOB 3. SELF CONCEPT AND YOUR WORK 4. PART TIME JOBS 5. HOW TO GET AND HOLD A JOB 6. INTERVIEWING	Aquarius Publishers	Apple TRS-80	$175.00	Provides a simple approach to the role of the entry level worker.
CHILD DEVELOPMENT AND CHILD CARE				
BABYSITTERS MANUAL	Intellectual Software	Apple IBM	$34.95	Includes responsibilities of babysitting, dealing with parents, and providing for needs and safety of children.
BIRTH DEFECTS SERIES 1. CAUSES 2. DETECTION, DIAGNOSIS, TREATMENT AND PREVENTION 3. TYPES	Intellectual Software	Apple IBM	$89.95	Focuses on kinds of birth defects and how they are treated.
CONTRACEPTION	Intellectual Software	Apple IBM	$34.95	
NEW BABY CARE	Intellectual Software	Apple IBM	$34.95	A tutorial on how to care for new infants.
PREGNANCY AND YOU	Intellectual Software	Apple IBM	$44.95 Two Disks	Focuses on body changes and development of child during pregnancy.
PRENATAL BABY CARE	Intellectual Software	Apple IBM	$34.95	

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
CLOTHING AND TEXTILES				
DESIGN ELEMENTS AND PRINCIPLES	Orange Juice Software Systems	Apple	$150.00 Five Disks	Analysis of color concepts, design elements and principles in relation to clothing.
KNOW YOUR PATTERN	Orange Juice Software Systems	Apple	$130.00 Four Disks	Pattern selection, use of guide sheet and pattern layouts are included.
TECHNIQUES OF SEWING SERIES: 1. EDGESTITCHING 2. GATHERING 3. STAYSTITCHING 4. DARTS	Orange Juice Software Systems	Apple	$300.00 or $95.00 each	
CONSUMER EDUCATION				
ADVERTISING TECHNIQUES	Micro Power and Light Co.	Apple II with Applesoft, 32K	$24.95	Focuses on techniques used in advertising.
ANALYZING AN AD Florence Taber	MCE Inc.	Apple	$44.95	Presents basic information about advertising. User designs and analyzes an ad.
COMPARATIVE BUYING: 1. BUYING WISELY 2. BECOMING AN INFORMED SHOPPER 3. UNDERSTANDING SALES BUYING 4. CASH VS. CREDIT BUYING Florence Taber	MCE, Inc.	Apple	$165.00 Four Disks	Comprehensive documentation and student worksheets.
CONSUMER EDUCATION 1: TRAVELING AND SHOPPING VOCABULARY 1. FOOD PURCHASING SKILLS 2. BON VOYAGE	Media Materials, Inc.	Apple TRS-80, Model III	$59.95	Teaches vocabulary.
DOLLARS AND SENSE	Monogram	Apple IBM	$165.00	A comprehensive home financial management package.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
CONSUMER EDUCATION — continued				
ESSENTIAL LIFE SKILLS: 1. THE BUDGETING TUTORIAL 2. THE BUDGETING SIMULATION Chrys Anderson	EMC Publishing	Apple TRS-80, Model III	$98.00 Two Disks	A tutorial on budgeting and a budgeting simulation for a family of four.
ESSENTIAL MATH SKILLS: 1. INSURANCE AND TAX APPLICATIONS 2. INSURANCE POLICIES	Media Materials, Inc.	Apple TRS-80, Model III	$59.95 Two Disks	Encourages use of mathematics skills related to taxes and insurance.
EVERYDAY MATH SKILLS 1: 1. CAR OWNER'S MANUAL FOR BETTER MATH SKILLS 2. ON THE ROAD WITH BASIC MATH SKILLS — TRAVELER'S MATHEMATICS	Media Materials, Inc.	Apple TRS-80, Model III	$59.95	Encourages use of math skills related to purchasing and maintaining a car.
FINANCE MASTER	Power Up	Apple (II+ requires 16K RAM card) IBM-PC and XT	$69.95 $139.95	Designed for home financial management.
EVERYDAY MATH SKILLS 3: PERSONAL FINANCES 1. EVERYDAY MATH SKILLS 2. MATH AROUND THE HOUSE	Media Materials, Inc.	Apple TRS-80, Model III	$59.95	Math skills oriented.
INCOME MEETS EXPENSES	MCE, Inc.	Apple	$340.00	Includes eight programs dealing with budgeting.
LEARNING TO USE THE MEDIA 1. WHAT'S THE SCOOP? 2. YOU DECIDE: THE INFLUENCE OF MEDIA	Media Materials, Inc.	Apple TRS-80, Model III	$59.95 Two Disks	Explores impact of newspapers and other media on consumers.
SMART SHOPPER	Power Up	Apple	$29.95	Useful in creating a shopping list for grocery, drug, or hardware store.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
CONSUMER EDUCATION — continued				
SURVIVAL SKILLS SERIES: 1. BUYING A USED CAR 2. READING AN ADVERTISEMENT 3. SHOPPING IN A COMPARATIVE WAY 4. CONSUMERISM AND YOU 5. CONSUMER FRAUD 6. UNDERSTANDING LABELS 7. LAWS FOR CONSUMERS 8. CONSUMER HELP	Aquarius Publishers	TRS-80, Model III	$235.00 Eight Disks	
THE MONEY MANAGER: A PERSONAL FINANCE SIMULATION Rick Thomas	Sterling Swift Publishing Co.	Apple	$74.95 (Plus $4.95 for student manual.)	A comprehensive simulation of personal finance — an entire course. Excellent documentation. Two disk drives desirable.
THE HOME ACCOUNTANT	South-Western Publishing Co.	Apple	$29.95	
TWO-INCOME LIFE STUDY 1. DAYS OF THEIR LIVES 2. DAYS OF YOUR LIVES	Clo's Line	Apple	$34.95	1. A "soap" about a family's life style and budgeting concerns. 2. A program for user to consider own family budget.
VOCABULARY FOR BANKING, POLICIES, AND CONTRACTS 1. CONSUMERISM, TAXES, INSURANCE, REAL ESTATE, DOCTORS 2. BANKING, EARNING MONEY, PAYING BILLS	Media Materials, Inc.	TRS-80, Model III	$59.95	A drill and practice program on how to be a good consumer.
YOU CAN BANK ON IT	MCE, Inc.	Apple	$285.00 Six Disks	Increases knowledge of banking related to savings and checking accounts.
FAMILY LIVING, VALUES, DECISION MAKING, SELF-IMPROVEMENT				
CONTEMPORARY LIVING	Aquarius Publishers	Apple TRS-80, Model III TRS-80, Cassette	$29.95 each disk. Four Disks	

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
FAMILY LIVING, VALUES, DECISION MAKING, SELF-IMPROVEMENT — continued				
DRUGS	Intellectual Software	Apple	$39.95	Focus is on why people use drugs, types of drugs and their effects, and the legal status of drugs.
I CAN (CAN YOU?)	Micro Power and Light Co.	Apple II with Applesoft, 32K	$29.95	Promotes awareness of options available to manage stress.
LIFE COPING SKILLS 1. BUILDING RELATIONSHIPS 2. FORMING POSITIVE BEHAVIOR 3. INCREASING SELF-ESTEEM 4. COMMUNICATION SKILLS	PLATO, Control Data Publishing Co.	Apple	$295.00 Nineteen Disks	
REPRODUCTION PROCESS-PREGNANCY-COPULATION TO BIRTH	Micro Power and Light Co.	Apple II with Applesoft, 32K	$29.95	
SOCIAL VALUES AND THE COMPUTER	PLATO, Control Data Publishing Co.	Apple	$59.95	Program explores the psychological, social, and economic impact of computers on individuals and families.
STUDY SKILLS James L. Lee and Charles J. Pulvino	Instructional Enterprises	Apple	$39.95	Encourages user to explore and improve study habits.
VENEREAL DISEASES	Intellectual Software	Apple IBM	$34.95	A tutorial on sexually transmitted diseases.
WHO AM I? James L. Lee and Charles J. Pulvino	Instructional Enterprises	Apple	$39.95	Four quizes on money values, parent relationships, self-concept, and stress management enable user to learn more about self.
FOODS AND NUTRITION				
CALORIE STUDY PROGRAMS 1. CALORIE GUESSTIMATE 2. ACTIVITY GUESSTIMATE 3. SIZE ALTERATION PLAN	Clo's Line	Apple	$29.95	Guesstimate programs of caloric intake and usage.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
FOODS AND NUTRITION — continued				
COMPUTING YOUR WAY TO BETTER NUTRITION	Sunburst Communications	Apple	$30.00	User analyzes eating habits in relation to sugar, chemical content, and nutrients in fast foods.
COST STUDY PROGRAMS 1. FOOD CENTS 2. COST CALC 3. INSTRUCT Clo Wiltise	Clo's Line	Apple	$29.95	Computes costs of recipes and individual foods. INSTRUCT tells user how to add to or update data base.
DIETING	Intellectual Software	Apple IBM	$34.95	
EATS Carol Byrd-Bredbenner	Nutrition Information and Resource Center	Apple	$75.00	A nutrient analysis program.
EAT SMART	The Pillsbury Company	Apple	$19.75	A tutorial and nutrient analysis program.
ELEMENTARY VOLUME 13 — NUTRITION	MECC	Apple	$45.00	
ESSENTIAL LIFE SKILLS: 1. THE NUTRITION TUTORIAL 2. NUTRITION SIMULATION Chrys Anderson	EMC Publishing	Apple TRS-80, Model III	$98.00 Two Disks	A tutorial on nutrition and a simulated grocery shopping experience.
FAST FOOD MICRO-GUIDE Jeffrey Schrank and John Fritz	The Learning Seed Co.	Apple TRS-80	$36.00	Nutrient analysis of meals served at ten well known fast food restaurants.
FOOD FACTS Curt Torgerson	MECC	Apple	$45.00	Includes basic concepts about sugar in cereals, chemicals in foods, fast foods, nutrients in common foods, and vitamins.
FOOD FOR THOUGHT	DDA	Apple	$35.00	Drill and practice on food additives, fad diets, food safety, labeling, myths, and other food facts.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
FOODS AND NUTRITION — continued				
FOOD POISONING, SANITATION, AND PREVENTION	Orange Juice Software Systems	Apple	$120.00 Four Disks	Explains causes of food poisoning in an entertaining space adventure.
GRAB-A-BYTE	Pacific Science Center, Washington Dairy Council, and National Dairy Council (Secure from local Dairy Council).	Apple	$30.00	Three nutrition games designed for use with FOOD . . . YOUR CHOICE Level 4 (Dairy Council).
GREASE	DDA	Apple	$38.50	A tutorial on ways fat affects one's health.
JUMPING JACK FLASH	DDA	Apple	$38.50	Calculates energy used in daily activities.
MICRO COOKBOOK Extra recipe disks available for SOUPS AND SALADS, APPETIZERS, AND DESSERTS	Power Up	Apple IIe with 80 column card. IBM with 128K of memory.	$39.95	A cookbook. Additional recipe disks available for $12.00 each.
MUNCHIES	DDA	Apple	$38.50	Compares nutrients in snack foods.
NUTRI-BYTES	Center for Science in the Public Interest	Apple IBM Kaypro Osborne (DD) — 80 column Televideo	$39.95	Disk contains three games on foods.
NUTRICHEC L. Duane Thurman	Dysan Corporation, Oral Roberts University	Apple	$59.95	A nutrient analysis program.
NUTRI-PACK	Microcomp, Inc.	Apple II with Applesoft	$39.95	A nutrient analysis program.
NUTRITION AND FOOD GROUPS	MECC	Apple	$36.00	
NUTRITION AND THE BASIC 4 FOOD GROUPS	Orange Juice Software Systems	Apple	$135.00 Five Disks	Provides information on food nutrients.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
FOODS AND NUTRITION — continued				
NUTRITION VOLUME I Muriel Brink and David Nelson	MECC	Apple	$46.00	Nutrient analysis of food eaten in a single day and amounts recommended for age and sex.
NUTRITION VOLUME II	MECC	Apple	$45.00	Enables user to analyze eating habits in relation to activity level.
OSP FOOD SERIES: 1. OSP AND THE PRINCIPLES OF EGG COOKERY 2. OSP AND THE PRINCIPLES OF VEGETABLE COOKERY 3. OSP AND THE PRINCIPLES OF QUICK BREAD PREPARATION	Orange Juice Software Systems	Apple	$225.00 Six Disks	Entertaining and informative programs using the story of an OSP (Outer Space Person).
PLACE SETTING, MEAL SERVICE AND TABLE MANNERS	Orange Juice Software Systems	Apple	$95.00 Two Disks	Instructs regarding meal service and manners. Uses graphics to illustrate.
RECIPE SEARCH RECIPE FIND Clo Wiltise	Clo's Line	Apple	$79.05 Two Disks	User may seek recipes meeting specific needs. Data bank may be added to or changed.
SALTY DOG	DDA	Apple	$38.50	Teaches about sodium in the diet.
SNACKMASTER: A NIBBLER'S DILEMMA Jeffrey Schrank and John Frity	The Learning Seed Co.	Apple TRS-80	$36.00	Games in which user selects ten snacks totaling less than 1200 calories.
SWEETH TOOTH	DDA	Apple	$38.50	Provides information about sugar and its effect on health.
THE EATING MACHINE Barbara Thorne	Muse Software, Inc.	Apple	$49.50 Two Disks	A comprehensive nutrient analysis program.
TO SALT . . . OR NOT TO SALT	Orange Juice Software Systems	Apple	$110.00	Analyzes role of salt in the daily diet and provides analysis of sodium content of many foods.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
FOODS AND NUTRITION — continued				
VITAMINS, MINERALS, AND HEALTH FOODS	Intellectual Software	Apple IBM	$34.95	
WATCH YOUR CALORIES Basics and Beyond, Inc.	Sunburst Communications	TRS-80, Cassette	$19.95	Calculates calories in various recipes.
WHAT DID YOU EAT YESTERDAY?	The Learning Seed Co.	Apple TRS-80	$39.00	Nutrient analysis program which uses number codes. Many common foods are omitted. However, many fast food items are included.
WHAT I USUALLY EAT	National Dairy Council and Iowa State University (Secure from local Dairy Council)	Apple	$30.00	A diagnostic program for elementary grades (3-6). Color monitor desirable.
YOU ARE WHAT YOU EAT	DDA	Apple	$79.95	Analyzes daily food intake.
HOUSING				
HOME SAFE HOME	MCE, Inc.	Apple	$165.00 Four Disks	Identifies common home hazards and techniques for preventing hazards.
POISON PROOF YOUR HOME Florence Tabor	MCE, Inc.	Apple	$210.00 Five Disks	Identifies four types of poisons and how to maintain a poison free environment.
SOLAR ENERGY FOR THE HOME	Instant Software	Apple	$34.95	Computes potential cost benefits of a home solar energy system. Documentation poor.
PRE-SCHOOL EDUCATION				
BUMBLE GAMES	The Learning Co.	Apple	$39.95	Teaches number lines, number pairs, and graph plotting. Color monitor needed.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
PRE-SCHOOL EDUCATION — continued				
CREATIVE PLAY Batya Friedman and Twila Slesnick	Lawrence Hall of Science	Apple	$47.94	Children's activities using language, math, and problem solving abilities.
DELTA DRAWING Computer Access Corporation	Spinnaker Software Corp.	Apple Atari 400/800/1200 Commodore 64 IBM	$49.95	Based on LOGO concepts. Color monitor needed. Printer desirable — requires a Centronics Parrallel card or a Grappler card.
EARLY GAMES FOR YOUNG CHILDREN John Paulson	Learning Tools, Inc.	Apple TRS-80, Model III Atari 400/800 IBM	$29.95	User is encouraged to match numbers, count blocks, do simple addition and subtraction, compare shapes, and match letters.
EZ LOGO Judy Anderson	MECC	Apple (LOGO language disk required.)	$48.00	For use with young children. Requires a special language disk (i.e.: APPLE LOGO).
FACEMAKER Clark Quinn and Margaret Weinstein	Spinnaker Software Corp.	Apple	$34.95	A game for young children.
GERTRUDE'S SECRETS Pere, Grimm, and Robinett	The Learning Co.	Apple	$44.95	Logic games and puzzles involving space and color relationships. Color monitor needed.
HODGE PODGE II Leonard Fresberg	Dynacomp, Inc.	TRS-80, Model I or III with minor adjustments.	$18.95	Encourages young children in concepts of letters, numbers, high/low, over/under, and quick/slow.
JUGGLE'S RAINBOW	The Learning Co.	Apple	$29.95	Teaches concepts of below/above and left/right. Color monitor needed.
LETTER GAMES	Island Software	Apple	$25.00	A drill and practice program on letters.

Series Title, Program Title, and Author	Producer/Distributor	Microcomputer	Price	Comments
PRE-SCHOOL EDUCATION — continued				
MINDSTRETCHER SERIES: 1. JIGSAW 2. RUBIK/CANDLES 3. BLACK/KAYLES	Island Software	Apple Atari IBM	$25.00 each program.	Color monitor desirable. Encourges children to analyze problems.
PRESCHOOL IQ BUILDER John Victor and Dean Victor	Program Design, Inc.	Apple Pet Cassette TRS-80, Cassette	$46.95 Two Disks	Concepts of same and different, letters, numbers, and matching. Color monitor desirable.
THE TERRAPIN LOGO LANGUAGE FOR THE APPLE II Virginia Grammer	Terrapin, Inc.	Apple IIe, 64K	$150.00	A graphics oriented programming language for children. Includes music and computation capabilities. Winner of 1982 Learning Software Award. Color monitor desirable.
THEIR WORLD 1. THEIR WORLD I 2. THEIR WORLD IV 3. THEIR WORLD VII Michael and Dana Shayer	Aquarius Publishers	Apple	$37.50 each program.	1. Vocabulary for food, clothes, toys. 2. Vocabulary related to familiar products. 3. Vocabulary related to clothes.
MISCELLANEOUS				
CLASSROOM POTPOURRI	Clo's Line	Apple	$30.00	Fifteen short programs written by home economics teachers.
MICROCOMPUTER APPLICATIONS IN VOCATIONAL EDUCATION: HOME ECONOMICS	Curriculum Publications Clearinghouse	Apple Commodore Pet TRS-80, Model I and III	$8.25	Includes fifteen programs on a variety of home economics topics.

GENERAL PURPOSE PROGRAMS

Two types of general purpose programs are useful in the home economics classroom: spreadsheet and word processing. There are numerous word processing or text editing software programs for every type computer. Two of the easiest to learn and use in the classroom are MAGIC WINDOWS II (Artsci, 1982) and BANK STREET WRITER (Scholastic Book Services, 1982). A word processing package, useful anytime a writing project is appropriate, permits the writer to compose on the video screen, and make revisions or corrections prior to printing copy which is formatted automatically. Use of word processing packages can encourage students to write more, and frequently improves ability to follow instructions since the programs require use of specific commands. Potential uses are limited only by the imagination of the teacher.

Dictionary programs, designed to work with word processing programs, such as MAGIC WORDS (Artsci, 1982), can be used to check spelling. Such programs ask the user whether words, not in its dictionary, are spelled correctly. The user must then make a decision concerning correct spelling. Such programs do not correct misspelled words. Decisions about corrections must be made by the user. A sample word processing activity appropriate for a home economics class is included on the next page.

Spreadsheets are useful in many situations where numerical information needs to be manipulated. However, accuracy is entirely dependent upon the logic of the user. Home economics students often regard budgeting as an uninspiring topic. Projecting "what if" budgeting situations on a spreadsheet such as VISICALC (Visicorp, 1979) enables students to visualize the effects of various changes in family finances. Such a program can be utilized to enable students to see how changing a single income or expenditure figure immediately affects the family financial situation. Students might explore how a family budget is affected when:

1. A family breadwinner is laid off.
2. Rent is increased $20 per month.
3. A breadwinner receives a $30 a month raise in pay.
4. Taxes are increased by 5%.
5. The January heating bill is twice as high as expected.
6. The refrigerator breaks down and a new one must be purchased.

Such learning activities are almost limitless, since a spreadsheet (sometimes called an electronic worksheet) can be structured so that typing in one new figure changes many other figures. Students can readily see how a single situation affects many others.

Although a spreadsheet requires some mathematical comprehension, such programs are designed so the primary task of the user is to know what questions to ask. Most teachers and students can master the basic concepts of how to set up a spreadsheet in three or four hours. Once formulas are determined and entered, the primary task of the user is to analyze the results obtained. A spreadsheet software package allows teachers and students to concentrate on the learning activity concepts rather than on tedious calculations.

Spreadsheets can also be utilized as a checkbook register; to compute taxes; project costs of loans; compute personal or group athletic statistics; analyze financial strategies, such as cost of borrowing money; calculate caloric intake; or nearly any other activity involving computation.

WORD PROCESSING ACTIVITY

I. Write a letter of complaint about a product you have purchased.

You have purchased a product or appliance and are not satisfied with the item. You have read the instruction manual, hang tags, and other operating or care instructions to make sure you have followed instructions. You have also kept your sales slip and warranty or other papers related to the product or appliance.

After checking the warranty, you contacted the salesperson and department manager of the firm where you made your purchase and explained your problem. You have made a note of the names of persons with whom you talked. You were not satisfied with their statement, "Sorry, we have no control over that particular problem."

Write a letter of complaint to the manufacturer. You will need to include:

1. Your name, complete address, and phone number.
2. Description of the product (name, model number, serial number, etc.).
3. Date of purchase.
4. Place of purchase (name and address of store or dealer).
5. A clear description of the problem and the steps you have taken to solve it.
6. Copies of contracts, receipts, labels, letters, and papers related to your problem.

II. Enter your letter.

Enter the letter you prepared using a word processing program and a computer with a printer. You should first enter the letter, and obtain a printed copy of the letter using the printer. Revise the letter if necessary using the word processor (don't forget to save the revised letter) and print the corrected copy.

FUTURE OF COMPUTERS IN THE SCHOOLS

Teachers will have great influence on how computers are used as learning tools in the school and in the home. The types of activities assigned and encouraged will serve as models for individuals and families. For maximum usage in home economics, computers must be located in the home economics classroom just as other home economics appliances. Easy access must prevail or teachers will find computers are too much trouble. If students must go to a media center, library, or other location outside the home economics classroom to use the computer, or if the teacher must borrow the computer from some other location, use is likely to be minimal.

Individual work stations in learning centers are an ideal way to encourage frequent and effective use of computers. Computers are particularly effective for individualized instruction. Students can proceed at their own speed. The computer is patient. It does not say "hurry up," it just sits and waits for the user. It can provide reinforcement and does not mind repeating the same information over and over and over and over. Yet, it is exacting. Exact instructions must be followed. Because a computer does not object to repetition or slowness, it is an excellent reinforcement aid for the slow learner or learning disabled. Even severely handicapped persons can use a computer. Special peripheral devices are available for some severe disabilities.

As computer literacy becomes more common, a greater amount of testing will be done via computer. Students will take tests on the computer, receive immediate feedback on answers, and receive scores upon completion of the test. Use of the computer to administer the College Entrance Examination has been proposed.

It is probable that society, both in schools and outside schools, will soon have a new class system: experts, consumers, and uninitiates. Experts may be defined as persons with computer knowledge and programming skills. These persons in society will control information and data bases. Consumers will be those persons who can use computers as a tool in daily life, work, and in making decisions. Uninitiates will be those persons lacking ability to use a computer as a tool in their daily life. Critics of computer assisted instruction believe that educationally disadvantaged students may be taught to merely follow instructions given by computers, while more capable and affluent students will learn to program computers and thus control them. This could make poorer students permanent members of the under class (Coburn et al., 1982).

You may say that, "One does not need to be able to operate a computer to manage a home or classroom. I have done it for years." A parallel example would be, "One does not need to be able to read to cook. My grandmother did it all her life." Life is changing rapidly. New skills are needed not only to cope but to promote further desired change.

A group of computer scientists recently forecast that all factual information will be on computer files by 1992 and libraries will exist only for literature (Douglas, n.d.). Already, indices to journals and publications are accessible via computers. The skills used in locating information for term papers and manuscripts are changing rapidly. No longer is it necessary to spend hours searching indices. Bibliographies on any topic can be printed in minutes via a computer literature search. It is only a matter of time until reference and other books are readily available via the computer. Schools will no longer need to purchase and store reference books. Instead, they will pay a fee to use data banks enabling students and teachers to have access to virtually every known reference.

Networking of computers makes it possible to send electronic messages via the computer, thus eliminating paper usage and time spent in delivering messages. Networks over wide areas, such as the Penn Link system between schools in Pennsylvania, can permit sharing of information almost instantly. The potential exists for communicating in the schools via computers rather than loud speakers and printed messages.

One of the major problems schools will have to face is copyright laws. Many teachers and schools have shared their resources freely. Only public domain (not copyrighted) software can be copied. Copying of copyrighted software and accompanying documentation is against the law. The 1976 Copyright Act (Public Law 94-533) and its 1980 amendments (Public Law 96-517) define computer programs as literary works, making copying illegal ("Highlights...", 1982).

To protect disks from illegal copying, software producers are using a variety of protection techniques including special coding and leasing agreements. However, purchasers do have certain rights.

1. A program may be copied by the purchaser for archival purposes — to guard against destruction or damage through mechanical failure. However, since most new software is copy-locked, it cannot be copied easily. Therefore, many companies are making back-up disks available for a small charge. Teachers cannot make copies for student use.
2. Adaptions in order to use the program correctly may be made.
3. Features may be added to a program as long as the altered program is not sold or given away.

Some new programs come with two disks: a program disk and a data disk. Both disks are needed to use the program. The program disk is locked. However, the data disk may be copied and altered as needed. THE EATING MACHINE (Muse, 1982) is such a program. The data disk (containing the data for analysis of foods) may be copied and additional data added to the data bank, or existing data may be changed if necessary. It also provides storage space for data on individual student diets. A few programs designed for classroom use have several copies of the program disk included.

Some computer dealers are encouraging schools to purchase a networking system (i.e., several inexpensive computers hooked to a more sophisticated controller computer). Such computer systems have limited value for the home economics classroom. Students must all do the same activity at the same time — making it difficult to individualize instruction. Such systems are adequate for teaching beginning programming skills but their limited size (usually 16K) and flexibility makes them inadequate for the home economics classroom. However, the greatest problem is that almost no commercial software can be used on such a system. The copy-lock on software makes it impossible to load most commercial programs to a network. Also, there are questions about whether using a single disk to put a program in many computers is legal.

A wide gap exists between the spectacular sophistication available in communication technology and its utilization in the schools (Anamdon, 1983). The potential exists for teaching both facts and decision making skills via the computer, thus freeing the teacher to serve as a facilitator. To accomplish this there must be sufficient well-designed software to meet specific objectives.

The teaching profession will change in the computerized future. The computer will do the testing and drilling, freeing the teacher to deal more with the human aspect of learning. The chief mode of learning and teaching will be simulations. Educational technology is a means, not an end. Adoption of technology for classroom use should be based on a concern for achieving specific results (Stakenas and Kaufman, 1981). Home economics teachers will need:

1. Skill in using computer hardware.
2. Skill in using commercial software.
3. Creativity to apply existing technology to new situations.
4. Ability to discuss concepts regarding the impact of computers on individuals, families, society, and jobs.
5. Ability to make wise consumer decisions in evaluating computer hardware and software.
6. Knowledge of limits of self with computers and where and when to seek assistance of an expert.
7. Knowledge of sources and methods to access information and data bases.
8. Knowledge of copyright laws regarding computer programs.
9. Ability to articulate why computers are needed and how they are used in the home economics classroom and to articulate specific needs for software and hardware.

Home economists need to help individuals analyze the results of information generated via the computer and use the results to change behavior. Unless students are encouraged to analyze data produced, "use of a computer can result in a glut of information and no corresponding improvement in the quality of family life" (Grogan, n. d., p. 6).

IMPACT OF COMPUTERS ON INDIVIDUALS AND FAMILIES

Society is using computers in many ways. Patients are admitted to the hospital through an interview by a receptionist seated at a computer terminal and the information is stored in the computer's memory. All major airlines make reservations on a computer system. Many major supermarkets use computers to check out groceries. Car repair and balancing and alignment of tires is computerized. Banking machines enable one to conduct bank business without going at specific hours. The impact of the computer on individuals and families cannot be ignored.

THE COMPUTER IN THE HOME

The idea of a computer in every home sounded ridiculous a few years ago but is fast becoming a reality. Even persons who do not use a computer are affected by them. There are many opportunities in home economics to help learners examine the impact of computers on daily life.

Families must identify needs of family members and determine how to satisfy those needs. When products can satisfy these needs, items should be procured in a cost effective manner. In order to do this effectively, a large amount of data must be juggled. Effective use of the home computer can enable individuals and families to manage this data and meet the needs of the household members more economically and often in less time.

Many people have been using a type of computer in the home without realizing it. Silicon chips, the basic element in a microcomputer, control microwave ovens, ranges, washers, dryers, refrigerators, dishwashers, and numerous small home appliances. An interesting learning activity might be to have students brainstorm where computers are present in our homes today.

BRAINSTORM:

Where are computers present in our homes?

The next major move will be to combine all household functions into a central computer system. Anything and everything now available on paper will be accessible electronically within seconds. People will be banking, shopping, and socializing through home computers.

A home computer connected to a data network system via telephone lines can help the home manager in many ways. The computer and the telephone may be a single major appliance which serves the needs of the family. The following illustration shows how the computer terminal/telephone can serve as the center for many home activities. This illustration could be made into a overhead projector transparency for use during classroom discussion.

HOME COMPUTER USES

Imagine yourself in a completely computerized home. How would life be different? Some of the possible differences might be as follows.

Home Management. Major tasks of home management include keeping financial records and health records, planning household furnishing and equipment purchases, and directing and executing the maintenance and operation of the home. The home computer would be programmed to calculate and compile income tax records, file family medical information, and analyze utility costs, home repair costs, and family savings and investments. Collectors of books, records, and stamps would keep track of these by means of a computer file. A computer checklist for preventative home maintenance would remind the home manager to have the car brakes checked, anti-freeze checked, smoke detectors and furnace inspected, and fire extinguishers recharged periodically.

Home Safety and Security. To provide added security, the computer would monitor sensors to warn the family of fire, break-ins, dangerous gases in the air, or flooding problems. A voice synthesizer would allow the home computer to say, "The oil burner is not functioning," or in case of fire, to say, "Keep low to avoid smoke inhalation," — advice people often forget in a moment of panic. This same voice synthesizer might be connected to the telephone to call the police or fire department in case of an emergency. Entrance to the home would be gained by punching a code in a computerized lock.

Family Health. Health is closely related to home safety. Many factors which influence the health of family members would be controlled through the computer. Uniform heating of the home would occur as the thermostat and solar heating panels were controlled by the computer. Breathing rates of sleeping children would be monitored and an alarm sounded if the pattern changed suddenly. A computer program containing first-aid information on heart attacks, choking, and other life-threatening emergencies would be readily available and familiar to all family members.

Food Management. The way in which food is managed is essential to the health maintenance of family members. The home computer, using a software package the family owned or connected to a data network system via telephone, would help the home manager analyze the day's menu and recipes for nutrient content and special ingredients required for a specific diet. With a program available through a data network system, a family member could compare prices of particular products, order the product, and pay for it by electronic funds transfer without ever leaving home.

Family members in our imaginary home would also have thousands of recipes collected over time. These would be filed on the microcomputer for quick and easy access. Quantities could also be enlarged or reduced by the computer.

Home Education. A microcomputer holds unlimited possibilities and benefits for home education in the future. Studies have already shown that the rate of learning of mentally handicapped individuals can be increased by as much as five times through the use of computer assisted instruction (Sand, 1981). The programming of the computer enables it to repeat concepts continuously and thus employ an important teaching technique in the education of mentally handicapped individuals. Severely physically handicapped individuals can operate a computer with almost any voluntary body movement by means of an electronic device. Persons with inadequate finger control can use a four position joystick.

Illustrations of how computers will assist with home education of the handicapped are already being seen. Recently, the parents of a young boy with cerebral palsy and a severe communication handicap turned to a microcomputer to help him communicate and to educate him. The boy accesses the keyboard through the use of his wrist brace and the eraser end of a pencil. He is most successful using a joystick to control the computer since this is the way he operates his chair (**Personal Computers**...n.d.).

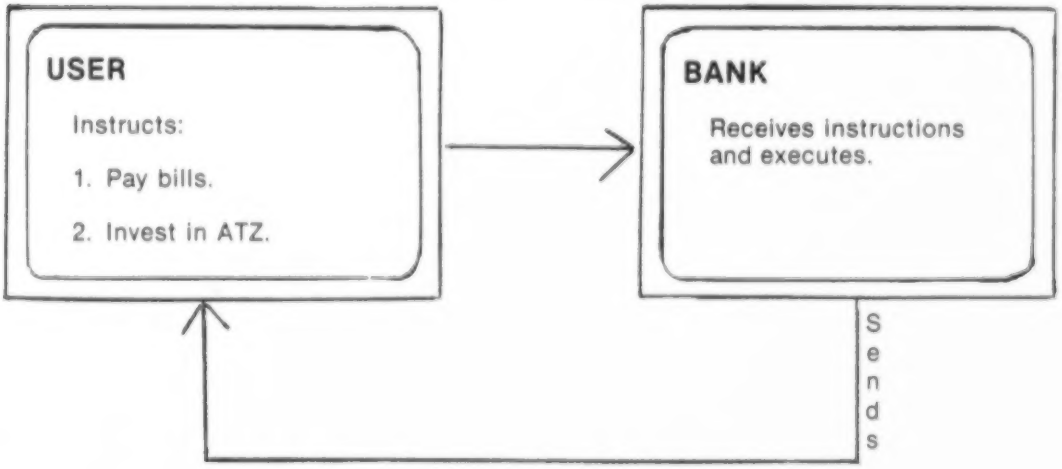
A computer can also simulate the action of the vocal cord thus allowing deaf persons to see what they are saying. Persons practice saying a word until their vocal cord action, transmitted to the computer, matches the simulated action ("Fast Forward", 1982).

The use of computer games in home education will likely become even more common in the future. Games involving eye/hand coordination and mental exercises are useful for mentally and physically handicapped family members as well as others. Computer games are not just for fun, many have a serious educational purpose. Arcade-style games, the bestsellers by far today, challenge eye and hand coordination. Adventure and fantasy games require the user to solve a mystery by answering questions through taking notes and making logical judgements. Strategy games allow the user to play familiar board games or even try to save a nuclear power plant from melt down. These games can provide good family entertainment while providing mental stimulation.

There will be many other eduction-related uses for the computer in the home of the future. For example, computers will be used to learn such money-making skills as typing or accounting. A family member may use a word processing program to write a novel at home, organize lengthy notes for a class project, or store and compile information on family genealogy. Other programs could be employed to generate musical tones and synthesize music.

Entertainment. In the home of the future, computers will assist family members in the pursuit of hobbies. For example, ham radio operators will store and forward messages on the computer. Model railroad enthusiasts will use the computer to switch trains from track to track. Gourmet cooks will write, revise, and organize their recipes on the computer.

Electronic Banking and Shopping. Banking and investing can already be done from home through computer terminals that are connected via telephone lines to the bank. A person telephones the bank, connects the receiver to the home computer and, using the computer's keyboard, summons an electronic checkbook to the screen. The user then enters bill payment information and bills are paid immediately without licking a stamp or addressing an envelope. The following diagram shows the process.



During the next ten years, personal computers and cable television networks will be able to offer far more than convenience in bill paying. In addition to managing their checking and savings accounts, customers will be able to apply for loans in the privacy of their own home. Other services will allow calculation of the value of an investor's portfolio based on up-to-the minute stock values, bond yields, and commodity prices.

Shopping may also be done by the computer and telephone. Pilot projects are now in operation permitting shoppers to view a catalog of items on a monitor along with product information and price. Orders are placed via the computer keyboard. A bank credit card is used for payment and the item purchased is mailed or shipped to the home. For some items, where seeing detail is not important, this system seems to work satisfactorily. Other items present problems (example: clothing) as computer graphic detail is poor. At least one company is experimenting by displaying video disk pictures on a TV monitor in conjunction with a computer. Sellers also keep track of inventory and computer bills through use of the universal product code.

The Phone-In Drive-Thru Market in West Los Angeles is the first computerized grocery store. This company plans to open sixteen more stores in California in the near future. Customers call in their shopping list from a catalog. Orders are punched into a computer and transmitted to workers who take the products off the shelves and bag them. The computer determines the sequence of pick-up so workers do not have to backtrack and the items which crush easily are picked up last. Three hours after calling in, a customer can pick up the groceries by punching their telephone number into a terminal outside the market.

Predictions indicate that twenty percent of the country's grocery shopping will take place in this manner by 1995. John Coughlan ("Grocery Express", 1983) foresees that the primary technologies for this process will include a personal computer system and videotex, an interactive communication system which uses the telephone, and cable TV or optical fiber transmission.

Information Storage and Access. As computers become more common, reference books and data will be placed on computer disks. This will be a boon to smaller homes as computer disks take up less storage space than books. Some literature may also be available for the computer. People may elect not to purchase a book but read it via a communication network system with their home computer connected via telephone lines to a central information system. Two general purpose information systems (The Source and Compuserve) are presently in operation. Access is available via telephone to persons who subscribe as members.

Whole books and even libraries will soon be on a single minute silicon chip. In addition to accessing information by telephone, individuals will be able to store large amounts of factual data and reading material in a small space in the home. Books and computers are both devices for storing information. The computer is superior to books in three ways: (1) size of the basic data unit is much smaller, (2) cost (chips are cheaper than paper), and (3) ease of transmission (by mail or electronic means) (Evans, 1979). This does not mean that persons will want to read books on a computer. People will still want some books in printed form so they can be taken anyplace or read in a comfortable spot without the need for special equipment. The greatest asset of having books and other reference materials on a computer network is quick availability.

Once the home computer is connected via a modem or accoustic coupler, information service such as The Source or Compuserve is available at a predetermined rate per connect hour. One may have to pay long distance telephone rates depending on the location. A computer keeps track of the time. Through telephone lines, one can seek specific information or store and transmit short and informal messages between individuals that have connection to the same service. The receiver need not be seated at a terminal at the specific time the message is sent as the message will be stored in a computer file and retrieved when desired.

This electronic mail system operates at the speed of a telephone call and allows messages to be sent and received at times convenient to both parties (i.e., messages can be sent when receiver is not home and then the receiver can respond with a return message). Each subscriber to this system is assigned an electronic "mailbox." After signing on, the subscriber is informed if there is any "mail" in the box.

An advantage to this system is that a person can take time to consider items and respond at a convenient time. Keeping in touch with colleagues or collaborating on manuscripts and publications is much easier. Letters or other documents can be written on the computer using a word processing program, revised or rearranged, and transmitted instantly to the recipient's terminal or printer.

The major disadvantage to such a system is the cost. If long distance lines are involved, cost can become very high.

By the early 1990's virtually all factual information will be available on computer files (Douglas and Neights, **A Guide**..., n.d.). Indices and reference books will be accessed via the computer. At the present time, many periodicals are indexed and in research data bases. **Dissertation Abstracts** are now computerized. Librarians access these indices through code words and a bibliography on a selected topic is printed in minutes. Thus, laborious searching of indices for pertinent references is eliminated.

The potential for interaction of phones and computers seems unlimited. Phone companies are encouraging us to think of the telephone as a computer.

POTENTIAL EFFECT ON WORKING AT HOME

Toffler (1980) in **The Third Wave**, refers to the home as an electronic cottage where word processing and data processing can be done, thus enabling a person to work at home while caring for children and the needs of the family. The technology for this exists today through "home computers, electronic mail, and word processing units. The computer will make possible a return to cottage industry on a new electronic basis, and with it a new emphasis on the home as the center of society" (p. 10).

Advantages of working at home are threefold:

1. Changing jobs would mean just plugging into another computer system instead of moving to another town.

2. There would be a reduction in energy requirements and pollution because of less commuting to work although more energy might be required for heating and cooling homes.

3. The family unit might feel a common goal by working together on shared work.

Children will grow up using and accepting computer-based services as a fact of everyday life. Children will see parents work and learn to respect work and its responsibilities. In the electronic cottage, family members could split a full-time job or hold two different jobs on alternating shifts (Toffler, 1980).

Naisbitt (1982) reports that pilot projects in which clerical employees work at home have received mixed reactions. Many workers feel isolation from other workers — missing office gossip and interaction with co-workers. Naisbitt (1982) believes people want to go to the office where they will be with others. Perhaps a solution would be some work done at home and some at the office. Or is it possible that the opportunity for more time with family and the opportunity to work at night will dominate?

The electronic cottage may become more common because the computer can provide work for homebound parents and the disabled. It would also provide savings for companies that need more space for expansion. Working at home saves some costs associated with babysitting, commuting, and buying a wardrobe. Working at home gives the employer the benefit of a good employee who otherwise might not be available because of domestic demands.

But there are disadvantages to working at home. If medical records are being transcribed at home, patient/doctor confidentiality may be threatened. Employers may consider persons who work at home self-employed and may not wish to pay a share of social security costs. Labor unions are concerned that society will return to abuses of the past when an employer put a sewing machine in a home and somebody was using it 24 hours a day. All the children were under pressure to turn out piece work. Is is possible the computer will be abused in the same way (Johnson, 1983, p.31)?

Whereas working at home may be very convenient, productivity may be affected by preschool children clamoring for cookies or other family members needing attention. Productivity may also be hampered by the lack of social contact with professional colleagues on a day-to-day basis. Synergy, which develops by working on problems with others, may be lost. People may become more isolated from society by spending more time at home in front of the computer. In addition, the added costs, such as those for telephone lines needed to transmit data, cannot be overlooked. Questions such as those illustrated in the following classroom activity section should encourage discussion about the impact of the electronic cottage upon families.

Questions for Discussion

What is the impact of the electronic cottage upon the family? Many home economics classes could address this issue by analyzing questions such as:

1. Can an individual concentrate on "work" and be productive while also having responsibility for family members?
2. What kind of self-discipline does a person have to have to work at home without direct supervision? Would working hours be more flexible?
3. How will employers establish amount of pay for work at home? Is this "cottage industry" going to produce problems like those that existed in the textile industry when persons sewing in their homes received less than minimum wage and no fringe benefits? What effect could this have on income earned by women and single parent families? Would this result in a greater number of women and children living in poverty?
4. What effect would increased contact among family members have on the family unit?
5. Would a sense of isolation from other workers develop? Or would interaction with other persons take the place of social interaction which now occurs between workers?
6. What would be the advantages and disadvantages of several family members working as a unit on one job or responsibility?
7. How would resources of time (traveling to and from work) and money (spent on transportation) be reallocated if work was done at home?
8. Would enough people be working at home to affect urban business in areas where workers now congregate (e.g., restaurants)?
9. Would the home need a room or location designed as office or work place? What changes in tax laws regarding home offices might result?
10. What impact would working at home have on the clothing industry? Would people wear more leisure clothing? Would people spend less on clothing?

INFLUENCE ON HOUSING DESIGN

Where to place a personal computer requires planning. One of the main enemies of a computer is the environment. Dirt, dust, and atmospheric debris can cause havoc in a computer and it peripherals. Computers require a static free environment. Rubbing feet on thick piled carpets produces a charge of electricity that can permanently damage a computer or software. Static electricity generated by the video display terminal has been linked to facial itching, eye redness, and fatigue. This occurs because computer users tend to stare at the screen without interruption for extended periods of time ("Computer VDT"...1982).

The architecture of today's home has been developed to house a nuclear family with smaller spaces and fewer bedrooms. If people begin to spend more of their time at home, houses may need to be larger again or people will be invading each other's spaces.

The home of the future will likely have a computer room with temperature and humidity control, special lighting, seating, and soundproofing. The keyboard will need to be at a height and position which enables the user to enter data and observe the data screen simultaneously without strain. The screen should be free from glare of a lamp or sun. Space for storage of computer disks will be needed.

A computer terminal in the kitchen will be very convenient for the homemaker. But it will have to occupy a spot away from drafts, grease, smoke, food, and water.

ISSUES OF CONTROL AND INTERACTION

The word "control" becomes very important in a computerized society. A fear of computers is sweeping the nation. Many persons are frightened that they are losing control of their own lives. Anxiety attacks, triggered by unhappy experiences people have with computers, is a condition called cyberphobia.

Examples of experiences which contribute to cyberphobia follow. When a computer breaks down, airline and hotel reservations are lost, charges for purchases are not made or credit for payments are made in error. Many older executives in the business world are afraid of computers because of the typing involved. They have "girls" to type, and if the executive types, status is thought to be lost. Another fear is that the 17 year old computer genius will take jobs from older persons. When a 9 year old child at home writes programs in Pascal (a fairly sophisticated computer language), adults become nervous. Computers can cause parents and children to reverse roles when the children know more about buying and using computers than the parents.

The ultimate purpose of every computer system is to help people. Yet it may threaten the privacy of people and its failure could inconvenience or threaten the lives of those who depend upon it. Orwell (1949), in **1984**, wrote about the invasion of privacy and thought processes by "Big Brother." His predictions may be closer to the truth than we like to think. "Computers as used by the bureaucrat — the IRS, AT&T, the National Security Agency — increase their power and reduce our freedom. Government and industry can literally trace and track people. Hospitals are using computer cost-analyses, rather than human need studies, to determine how many nurses to hire" (Ferraro, 1984, pp. 1-2). We are depending more and more on computers and increasingly they are dominating our thinking. The following classroom activity titled Data Bank Discussion Questions could be used to help students explore some of these issues.

Data Bank Discussion Questions

Home economics classes might examine the invasion of the privacy of individuals and families made possible by the development of large banks of data concerning individuals. Files are maintained about such things as businesses, social agencies and financial institutions, health, finances, education, employment history, religion, recreational preferences, and purchasing habits. Although the media have reported the ease with which vast amounts of information about individuals can be acquired, the average person frequently is unaware of the existence of large data banks and how easily information can be acquired from them. Classes might investigate what data banks exist in their community, investigate this topic in current periodicals, and consider in discussion, questions such as:

1. How easily can unauthorized persons access information in data banks?
2. What is the cost to maintain a data bank? What is the cost to the person wanting information? How does this affect the price of goods and services in the marketplace?
3. Are efforts made to insure the right of privacy of an individual?
4. How can an individual determine if the information stored about him or her is accurate? How can inaccurate information be corrected?
5. How is transfer of information from one computer to another authorized?

In order to overcome cyberphobia, a person needs pleasant experiences with a computer. Computer games can help develop positive attitudes. A computer game can be fascinating because the player develops a unique symbiosis with a machine. A video game is potentially more intellectually challenging than any other game we can play.

Games can also lead to hypnotic obsession which is the danger — obsession to the point of blind dominance and obedience (Mueller, 1984). One of the reasons for this obsession is that life is difficult and by playing games persons escape disagreeable experiences (particularly during adolescence). By surrendering to the demands of a challenging game, a person gains a feeling of mastery by winning.

IMPACT ON WORKPLACE ROLES AND SKILLS

Another social issue is that frequently the role of the worker seems to be threatened because automatic systems require less human help. Computers can provide services efficiently without error. (Errors are made by humans who put data into them, not by computers.) Payroll, billing, and inventories are all computerized. The days of running a major organization without the use of a computer are gone.

It is estimated that by 1985, 75 percent of all jobs will involve computers in some way (Naisbitt, 1982). There are three stages of technological innovation:

1. New technology or innovation follows the line of least resistance.
2. New technology is used to improve previous technologies.
3. New directions or uses are discovered that grow out of technology itself.

Society is presently in the second stage of computer technology. This second stage may last a long time. New inventions and applications, now unimagined, must occur before stage three is reached (Naisbitt, 1982).

Home economics teachers can help break down the barriers of traditional male/female roles in the workplace by using a microcomputer in the classroom. Two-thirds of the computer users in education are male. Many people still think the place for computers is in math courses. Math teachers teach about computers and computer courses tend to have math prerequisites. Many teachers assume that most girls suffer from "math anxiety" and therefore do not encourage females to enroll in computer classes. A computer is not just a math tool but can do many other essential tasks in the home and workplace. Women are as capable as males of learning to operate computers. Home economics teachers can help insure that females in their classes feel comfortable with computers. Having some computer skills could be especially helpful to women as they enter the job market.

IMPACT ON THINKING SKILLS

Using a computer requires that explicit instructions be followed in exact sequential order. Computers do exactly what they are told to do in small steps. A programmer must analyze steps and sequence them in logical order. Using skills of analysis and decision making are essential. Learning to program requires a precise, logical, and sequential mode of thinking. As persons become more accustomed to thinking in the small logical steps required for programming a computer, these thinking skills will be transferred to other problems and situations. This could lead to improved ability to analyze alternatives and make decisions. Programming also requires use of skills of synthesis. Humans must think logically concerning what they tell the computer to do as illustrated in the following story.

A Computer Does Exactly What It Is Told To Do

A teacher was demonstrating the new classroom computer and word processing program to a group of parents. She emphasized that the computer always does exactly what you tell it to do. After writing a document several paragraphs in length, the teacher decided to demonstrate what this marvelous tool would do. She said, "I can change every 'e' to 'a' simply by pushing a few keys." She pushed the keys and instantly every "e" in the document was changed to "a." After the parents had marvelled over how easily this was done, the teacher decided to change the "a's" back to "e's." She pushed the correct keys and instantly all the letters she had changed to "a" were changed back to "e" along with all the letters which were "a" to start with and were supposed to be "a."

We can only speculate about the impact computers will have on thinking ability when persons begin to use computers as small children and continue to use them throughout life. Papert (1980) believes that computers have the potential to change the way individuals think and approach problems. He has developed a computer language, LOGO, with which young children develop programming skills. He emphasizes that learners need to acquire a sense of mastery over the computer and that children can feel comfortable with and develop a sense of mastery over the computer at a young age. Learning to communicate with the computer should be a natural process acquired gradually, as the spoken language is acquired, by living with and using it daily. Such a process is active and self-directed. Our educational and cultural systems focus on the idea that you either have the problem "right" or "wrong." As everyone who has programmed a computer knows, one almost never gets it right the first time. One must use problem solving techniques to isolate and correct "bugs" which keep the program from working. This process can help develop skills for solving problems and making decisions in other situations.

A is for Apple. **B** is for binary.
C is for computer. **D** is for diskette . . .

Computers will cause learning to be reconceptualized and bring new understandings of subjects and new approaches to problems. Papert (1980) believes that in order to acquire a sense of mastery over the computer, every learner needs knowledge of programming. Teaching the skill of programming is usually not the role of the home economics teacher. Home economists must be able to stimulate the use of the computer for practical home economics applications.

MAKING COMPUTER PURCHASE DECISIONS

Even if a home economics teacher does not have access to a computer, there are many relevant computer topics that can be discussed in the home economics classroom. One last important topic concerns whether and how to purchase a computer. Television, newspapers, and other media encourage consumers to buy a home computer. Peer pressure and high pressure sales tactics combine to sell an uninformed consumer a computer that soon becomes a dust collector because it does not perform as the purchaser thought it would. Resale value of used computers usually also falls short of the original price. A lesson plan focusing on computer purchase decision making follows.

COMPUTER PURCHASE LESSON PLAN

Objective: Make informed decisions concerning purchase of a home computer system.

Content	Student Learning Activities
Computers can process data, words, and play games.	Discuss what kinds of things a computer can do.
Individuals have different needs and desires regarding computers.	Have each student list "how I want to use a home computer."
	Have students survey other family members about ways they would use a computer.
Computers and software are designed for specific purposes (e.g., business, word processing, game playing).	Collect and compare advertisements for various computers (makes, sizes, peripherals, costs). Assess claims made in advertisements.
Each computer requires specific software — not all computers have software for all uses or purposes.	Visit computer stores or study computer software catalogs and advertisements to find out about software. Determine types of software available for each computer. List minimum size of computer for each software program.
Planning increases the ability of individuals or families to obtain a computer which meets their needs.	Make a chart comparing: 1. Personal wants in a computer. 2. How each computer and the software for it can meet these needs.
	Plan what must be included in initial purchase and what peripherals may be purchased later.

Evaluation: Write an essay of at least three paragraphs in which you:

1. Explain your needs and your family's needs for a computer system.
2. Identify the computer system (make, size, peripherals needed, cost) which you believe best meets the needs of your family and explain how it meets the needs.
3. Develop a plan for acquiring the computer system (i.e., what you will purchase when and how you will pay for it).

The homemaker will need to be computer literate to be an effective manager in the future. Much responsibility for developing this competency lies with the home economics teacher.

"There is a world of difference between what computers can do and what society will choose to do with them" (Papert, 1980, p. 5). Home economists have a major responsibility in influencing how they will be used in the home, family, and society.

SAMPLE PROGRAMS

This section includes examples of simple computer programs which could be entered into a computer for use. A crossword puzzle developed on the computer is also included. It could be reproduced and used in the classroom.

CARPET COSTS

A Problem Solving Program
Written on Apple IIe

This program determines the amount needed and cost of carpet for three rooms. It then prints the square feet, square yards, and cost for each room and the total cost of carpet for all three rooms. The user will need to know the size of each of three rooms and the cost of carpet per square yard. Students with programming skills could write programs of this type.

```
10  REM  CARPET COST
20  LET T = 0
30  FOR J = 1 TO 3
40  PRINT "What is the length in feet of room "J" ?"
50  INPUT L(J)
60  PRINT "What is the width in feet of room "J" ?"
70  INPUT W(J)
80  PRINT " "
90  NEXT J
100  PRINT "What is the cost of carpet per square"
110  PRINT "yard?  (Do not use a dollar sign.)"
120  INPUT C
130  FOR J = 1 TO 3
140  LET SF(J) = L(J) * W(J)
150  LET SY(J) = SF(J) / 9
160  LET SY(J) =  INT (SY(J) + .999)
170  LET C(J) = SY(J) * C
180  LET T = T + C(J)
190  NEXT J
200  HOME
210  PRINT "SQ. FT.","SQ. YDS.","COST"
220  FOR J = 1 TO 3
230  PRINT SF(J),SY(J),C(J)
240  NEXT J
245  PRINT " "
250  PRINT " "
260  PRINT "Total cost of carpet for three rooms is"
270  PRINT "$ ";T;"."
280  END
```

CLOTHING CONSTRUCTION COSTS

Written for Apple IIe

This program enables the user to compute the cost of constructing a garment or other clothing project.

```
10  HOME
20  PRINT "     CLOTHING CONSTRUCTION COSTS"
30  PRINT " "
40  PRINT "This program enables you to determine"
50  PRINT "how much money you spent constructing"
60  PRINT "a garment or other clothing project."
70  PRINT " "
80  PRINT "How much did you spend for the fabric?"
90  PRINT "Enter the amount.  Do not use a dollar"
100  PRINT "sign now or any time in this program."
110  PRINT "Use a decimal to indicate cents."
120  PRINT " "
130  INPUT A
140  PRINT " "
150  PRINT "How much did you spend for thread?"
160  PRINT "Enter the amount.  Remember to use"
170  PRINT "a decimal."
180  PRINT " "
190  INPUT T
200  PRINT " "
210  PRINT "How much did the pattern cost?"
220  INPUT P
230  PRINT " "
240  PRINT "I will now list a number of other items"
250  PRINT "you may have purchased.  Enter the"
260  PRINT "amount you spent for each--don't forget"
270  PRINT "to use a decimal point to indicate"
280  PRINT "cents.  If you did not purchase the"
290  PRINT "item listed, enter a zero."
300  PRINT " "
310  PRINT "Belt buckle"
320  PRINT " "
330  INPUT B
340  PRINT " "
350  PRINT "Belting or backing to make belt."
```

```
360  PRINT " "
370  INPUT BB
380  PRINT " "
390  PRINT "Interfacing"
400  PRINT " "
410  INPUT I
420  PRINT " "
430  PRINT "Lining fabric"
440  PRINT " "
450  INPUT L
460  PRINT " "
470  PRINT "Buttons"
480  PRINT " "
490  INPUT BU
500  PRINT " "
510  PRINT "Zipper"
520  PRINT " "
530  INPUT Z
540  PRINT " "
550  PRINT "Snaps"
560  PRINT " "
570  INPUT S
580  PRINT "Hooks and eyes"
590  PRINT " "
600  INPUT H
610  PRINT " "
620  PRINT "Seam tape or binding"
630  PRINT " "
640  INPUT ST
650  PRINT " "
660  PRINT "Trimming or decoration"
670  PRINT " "
680  INPUT TR
690  PRINT " "
700  PRINT "Did you purchase anything else?"
710  PRINT "If so, enter the total cost of any"
720  PRINT "other purchases here."
730  PRINT " "
740  INPUT X
750  PRINT " "
760  LET C = A + T + P + B + BB + I + L + BU + Z + S + H + ST + TR + X
770  PRINT "The total cost of your garment"
780  PRINT "is $ ";C;"."
790  PRINT "Is it worth it?  Enter YES or NO."
800  PRINT " "
810  INPUT A$
820  IF A$ = "YES" THEN 880
830  IF A$ = "NO" THEN 1160
840  PRINT " "
850  PRINT "Whoops!  Is your spelling correct?"
860  PRINT "Try again.  Enter YES or NO."
870  GOTO 800
880  HOME
890  PRINT "Great! I'm glad your're pleased with it."
900  PRINT "Would you like to compute your labor"
```

```
910  PRINT "for constructing the project?"
920  PRINT "Answer YES or NO."
930  PRINT " "
940  INPUT B$
950  IF B$ = "YES" THEN 990
960  IF B$ = "NO" THEN 1210
970  PRINT "Try again."
980  GOTO 920
990  PRINT " "
1000  PRINT "How many hours did you spend"
1010  PRINT "constructing the garment or project?"
1020  PRINT " "
1030  INPUT HO
1040  PRINT " "
1050  PRINT "How much is your time worth per hour?"
1060  PRINT " "
1070  INPUT R
1080  LET TC = HO * R + C
1090  HOME
1100  PRINT "You spent $ ";C;" on fabric and"
1110  PRINT "items to construct your project."
1120  PRINT "The value of your time equals $ ";HO * R;"."
1130  PRINT "The total cost or your project"
1140  PRINT "equals $ ";TC;"."
1150  GOTO 1210
1160  PRINT "I'm sorry you do not feel your project"
1170  PRINT "is worth the cost.  I hope you are"
1180  PRINT "pleased with your next project.  I"
1190  PRINT "hope that this project has been a"
1200  PRINT "valuable learning experience for you."
1210  PRINT " "
1220  PRINT "Think about these questions and"
1230  PRINT "discuss them with another person such"
1240  PRINT "as your teacher or classmates."
1250  PRINT ""
1260  PRINT "What have I learned from this "
1270  PRINT "construction project?"
1280  PRINT " "
1290  PRINT "Would it have been less expensive or"
1300  PRINT "more expensive to purchase the item"
1310  PRINT "rather than construct it?"
1320  PRINT " "
1330  PRINT "What satisfactions do I feel as a"
1340  PRINT "result of constructing this item?"
1350  PRINT " "
1360  PRINT "Goodby for now.  I hope you enjoyed"
1370  PRINT "using this computer program."
1380  END
```

FOODS QUIZ

Or Drill and Practice Program
Written on Apple IIe

```
10  LET R$(1) = "VERY GOOD "
20  LET R$(2) = "TERRIFIC "
30  LET R$(3) = "FANTASTIC "
40  LET R$(4) = "OUT OF SIGHT "
50  LET R$(5) = "TOO BAD "
60  LET R$(6) = "SORRY "
70  LET R$(7) = "NO WAY "
80  LET R$(8) = "NO DICE "
90  HOME
100  PRINT "WHAT IS YOUR FIRST NAME?"
110  PRINT " "
120  INPUT N$
130  PRINT " "
140  PRINT "HI, ";N$;"."
150  PRINT "THIS IS A QUIZ ON THE BASIC FOUR."
160  FOR J = 1 TO 3000: NEXT J
170  HOME
180  FOR J = 1 TO 5
190  READ Q$,A$,B$,C$,D$,P$
200  PRINT J;Q$
210  PRINT A$
220  PRINT B$
230  PRINT C$
240  PRINT D$
250  INPUT G$
260  PRINT " "
270  IF P$ = G$ THEN X =  INT (4 *  RND (1) + 1): PRINT R$(X);N$:S = S + 1: GOTO 300
280  IF P$ <  > G$ THEN X =  INT (4 *  RND (1) + 5)
290  PRINT R$(X);" THE CORRECT ANSWER IS ";P$
300  PRINT " "
310  NEXT J
320  PRINT "YOU ANSWERED ";S;" OF THE 5 QUESTIONS CORRECTLY, ";N$;"."
330  PRINT "THAT'S ALL FOR NOW."
340  DATA  ".  TO WHAT FOOD GROUP DO EGGS BELONG?"
350  DATA  "        A - MEAT"
360  DATA  "        B - DAIRY"
370  DATA  "        C - BREAD AND CEREAL"
380  DATA  "        D - FRUIT AND VEGETABLE"
390  DATA  "A"
400  DATA  ".  WHICH FOOD GROUP PROVIDES THE RECOMMENDED DAILY ALLOWANCE OF PROTEIN?"
410  DATA  "        A - DAIRY"
420  DATA  "        B - BREAD AND CEREAL"
430  DATA  "        C - MEAT"
440  DATA  "        D - FRUIT AND VEGETABLE"
450  DATA  "C"
460  DATA  ".  THE FOOD GROUP WHICH PROVIDES THE BEST SOURCE OF VITAMIN B IS"
470  DATA  "        A - MILK"
480  DATA  "        B - MEAT"
490  DATA  "        C - FRUIT AND VEGETABLE"
```

```
500  DATA  "         D - BREAD AND CEREAL"
510  DATA  "D"
520  DATA  ".  FOUR SERVINGS OF MILK A DAY PROVIDES THE RECOMMENDED DAILY ALLOWANCE OF"
530  DATA  "         A - IRON"
540  DATA  "         B - CALCIUM"
550  DATA  "         C - POTASSIUM"
560  DATA  "         D - PHOSPHORUS"
570  DATA  "B"
580  DATA  ".  THE NUMBER OF SERVINGS NEEDED OF EACH FOOD GROUP EACH DAY IS"
590  DATA  "         A - 4,5,2,1"
600  DATA  "         B - 3,2,1,1"
610  DATA  "         C - 3,4,3,4"
620  DATA  "         D - 2,4,4,4"
630  DATA  "D"
640  END
```

NET WORTH

Written on Apple IIe

Users of this program may determine their net worth. However, prior to using the program, the individual will need to secure information concerning their assets and liabilities. A printer must be connected to the computer and turned on prior to using this program.

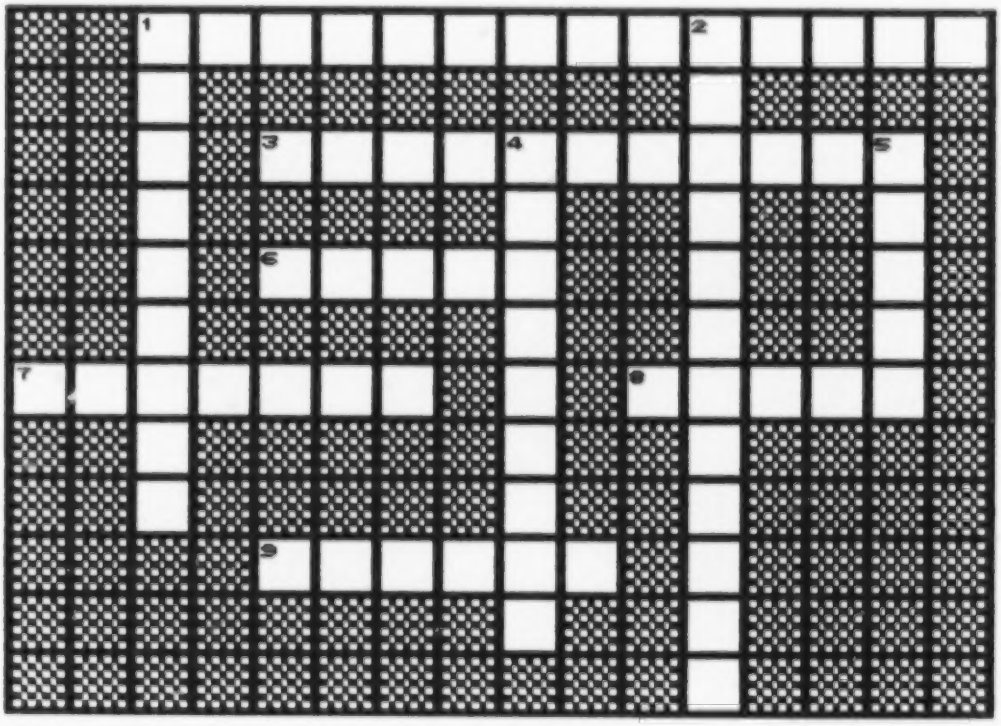
```
10  HOME
20  PRINT : PRINT
30  PRINT "                NET WORTH": PRINT : PRINT
40  PRINT "     Most of us dream of living long"
50  PRINT "enough to retire from a rewarding"
60  PRINT "career and spending our retirement"
70  PRINT "years enjoying life.  As part of this"
80  PRINT "dream, we picture ourselves in good"
90  PRINT "health with adequate financial"
100  PRINT "resources to live comfortably and even"
110  PRINT "splurge on a few special adventures."
120  VTAB 22: HTAB 8: PRINT "PRESS RETURN TO CONTINUE.";: GET Z$
130  HOME
140  PRINT "     Living comfortably in our senior"
150  PRINT "years requires long range planning."
160  PRINT "Such a long range plan requires the"
170  PRINT "steady accumulation of assets over"
180  PRINT "many years.  When planning a budget,"
190  PRINT "one should include a portion which"
200  PRINT "helps build assets for a comfortable"
210  PRINT "retirement.": PRINT
220  PRINT "     One way of determining how well"
230  PRINT "you are accumulating assets is by"
240  PRINT "making a financial inventory at"
250  PRINT "periodic intervals--for example, at"
260  PRINT "a specific date each year.  Comparing"
270  PRINT "your financial inventory or net worth"
280  PRINT "at regular intervals provides a basis"
290  PRINT "for analyzing progress in achieving"
300  PRINT "financial goals.  You can tell if your"
310  PRINT "net worth is increasing, decreasing,"
320  PRINT "or remaining the same."
330  VTAB 22: HTAB 8: PRINT "PRESS RETURN TO CONTINUE.";: GET Z$
340  HOME
350  PRINT "     Following is a networth statement"
360  PRINT "which may be used by individuals or"
370  PRINT "families.  If you are a teenager, you"
380  PRINT "may  find several catagories not "
390  PRINT "relevant at this time.  However, you"
400  PRINT "may be surprised how many assets you"
410  PRINT "have.": PRINT
420  VTAB 22: HTAB 8: PRINT "PRESS RETURN TO CONTINUE.";: GET Z$
430  HOME
440  PRINT "     You will need to help by"
450  PRINT "securing the necessary information"
460  PRINT "and entering your present assets and"
470  PRINT "liabilities.  Then we will determine"
480  PRINT "what you owe.": PRINT
490  PRINT "     Enter the amount you have in each"
500  PRINT "category.  Do not use a dollar sign.": PRINT : PRINT
510  DIM I$(30),A(30)
520  RESTORE
530  PRINT
540  PR# 1
```

```
550  HTAB 10: PRINT "NET WORTH STATEMENT": PRINT : PRINT
560  PRINT "WHAT YOU OWN"
570  FOR I = 1 TO 20
580  READ I$(I)
590  PRINT I$(I)
600  INPUT A(I)
610  PR# 1
620  PRINT A(I)
630  PRINT
640 B = B + A(I)
650  NEXT I
660  PRINT "TOTAL ASSETS:  $";B: PRINT
670  FOR X = 1 TO 2000: NEXT X: PRINT
680  PRINT "WHAT YOU OWE"
690  FOR I = 21 TO 27
700  READ I$(I)
710  PRINT I$(I)
720  INPUT A(I)
730  PR# 1
740  PRINT A(I)
750  PRINT
760 D = D + A(I)
770  NEXT I
780  PRINT "TOTAL LIABILITIES:  $";D: PRINT
790  FOR X = 1 TO 2000: NEXT X
800  PRINT
810  PRINT "YOUR NET WORTH (assets minus"
820  PRINT "liabilities):  $";B - D: PRINT : PRINT
830  FOR X = 1 TO 3500: NEXT X
840  PR# 1
850  PRINT "The date of today is "
860  PRINT
870  INPUT D$,Y$
880  PR# 1
890  PRINT D$;", ";Y$
900  PRINT
910  PRINT "     Save your Net Worth Statement"
920  PRINT "in a safe place.  In six months or a"
930  PRINT "year, you can make another one to see"
940  PRINT "how your net worth has changed."
945  PR# 0
950  REM  Assets
960  DATA  "Cash in checking account"
970  DATA  "Cash in savings account"
980  DATA  "Value of government savings bonds"
990  DATA  "Cash value of insurance policies","Equity in pensions"
1000  DATA  "Equity in profit sharing plans","Value of annuties"
1010  DATA  "Loans owed you"
1020  DATA  "Retirement funds (IRA or Keogh Plan)"
1030  DATA  "Tax refunds due"
1040  DATA  "Market value of securities:  Bonds"
1050  DATA  "Money Market Funds","Mutual Funds","Investment Trusts"
1060  DATA  "Cash Value of Personal Property:        Home and Real Estate"
1070  DATA  "Car(s)", "Furniture","Appliances"
1080  DATA  "Other Personal Property"
1090  DATA  "Other Assets"
1100  REM  Liabilities
1110  DATA  "Debts on Mortages and Real Estate","Balance Due on Car"
1120  DATA  "Other installment debts (furniture, appliances, etc.)"
1130  DATA  "Personal Loans", "Current Outstanding Bills"
1140  DATA  "Taxes Due","Other Debts and Liabilities"
1150  END
```

VALUES AND CHOOSING

A Crossword Puzzle Constructed Using
CROSSWORD MAGIC (L. & S. Computerware, 1981)

VALUES AND CHOOSING



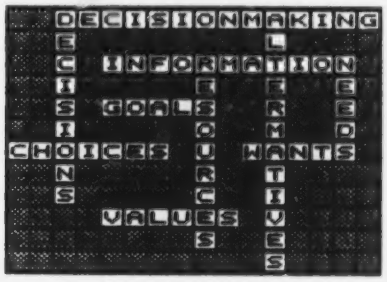
ACROSS CLUES

1. PROCESS FOR CHOOSING INVOLVING LOGIC
3. FACTS
6. SPECIFIC OBJECTIVES WHICH PROVIDE A BASIS FOR ACTION
7. POSSIBILITIES FROM WHICH SELECTIONS ARE MADE
8. INSATIABLE DESIRES (i.e., DESIRES INCAPABLE OF BEING SATISFIED)
9. ABSTRACT IDEAS CONSIDERED IMPORTANT WHICH GUIDE EVERYDAY BEHAVIOR AND DECISIONS

DOWN CLUES

1. CHOICES WHICH ARE MADE BY HABIT OR A LOGICAL THOUGHT PROCESS
2. VARIETY OF OPTIONS FOR MAKING A DECISION
4. INCOME, KNOWLEDGE, OR ABILITIES WHICH CAN BE USED TO ACQUIRE DESIRES
5. THINGS WE CANNOT DO WITHOUT

ANSWERS: VALUES AND CHOOSING



COMPUTER TERMS

BASIC	Beginner's All Purpose Symbolic Instruction Code.
Byte	A character of information.
Chip	A small piece of silicon containing circuitry to carry out computer operations; a microprocessor.
Courseware	Software plus accompanying materials for instructional use.
CPU	Central Processing Unit — a small silicon chip that controls the computer.
Disk/Diskette	A round flat magnetic piece of material on which information is stored. Floppy disks and hard disks are used.
Disk Drive	A peripheral device that drives the diskette on which information can be stored and retrieved for later use.
Documentation	User guides and support materials accompanying software.
DOS	Disk Operating System — the system which controls the computer.
Graphics	Characters used to form shapes and pictures on video display or printer.
Hardware	The actual computer equipment.
K	The quantity of bytes or characters of information a computer can hold at one time. Common microcomputers are referred to as 4K, 16K, 48K, 64K, 128K. One K = 1024 bytes or characters.
Peripheral	Equipment other than the computer including printers, disk drives, and joy sticks.
Program	A set of specific instructions which informs the computer in logical sequence what to do.
Programming	The skill of developing a program.
Software	Computer program (on a disk or tape).
Video display unit	(Sometimes called monitor or CRT — Cathode Ray Tube.) A screen similar to a television screen on which output may be seen.

SOFTWARE PRODUCERS AND DISTRIBUTORS

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014

Aquarius Publishers
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Indian Rocks Beach, FL 33535

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Center for Science in the Public Interest
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Volbor's, MT 59351

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Suite 140 Shelard Plaza North
Minneapolis, MN 55426

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Dietary Data Analysis (DDA)
P.O. Box 26
Hamburg, NJ 07419

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Hammet Company Microcomputer Division
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1008 Stewart Drive
Sunnyvale, CA 94086

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2936 Lemington Avenue
Baltimore, MD 21211

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2015 N.W. Circle Blvd.
Corvallis, OR 97330

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157 South Kalamazoo Mall
Kalamazoo, MI 49007

Micro Power and Light Company
12820 Hillcrest Road
Suite 224
Dallas, TX 75230

Micro Software Solutions
Division of Career Aids, Inc.
8950 Lurline Avenue, Dept. B345
Chatsworth, CA 91311

Minnesota Educational Computing Consortium (MECC)
2520 Broadway Drive
St. Paul, MN 55113

Monogram, Division of Tronix
8295 South LaCienga Blvd.
Inglewood, CA 90301

Muse Software, Inc.
347 North Charles Street
Baltimore, MD 21201

National Dairy Council
Rosemont, IL 60018

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Benedict House, Penn State University
University Park, PA 16802

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